DOCUMENT RESUME

ED 025 362 24 RC 003 109

By- Speiss, Madeleine F.; And Others
Classroom Strategies: Classroom Management Systems. Volume 3.
Southwestern Cooperative Educational Lab., Albuquerque, N. Mex.
Spon[illegible]ency- Office of Education (DHEW), Washington, D.C. Bureau of Research.
Bureau No- BR-6-2827
Pub Date Jun 68
Contract- OEC-4-7-062827-3078
Note- 182p.
EDRS Price MF-$0.75 HC-$9.20

Descriptors- *American Indians, Anglo Americans, *Class Management, Classroom Techniques, Comparative Analysis, Cultural Differences, Experimental Groups, Learning Motivation, *Learning Theories, Reinforcement, Response Mode, Rewards, Social Influences, *Spanish Americans, Stimulus Devices, *Teaching Styles

Classroom management is defined as procedures for arranging the classroom environment so that children learn what the teacher wants to teach them in the healthiest and most effective way possible. The Southwestern Cooperative Educational Laboratory presents a discussion of these procedures as they relate to social controls and components of learning theories (motivation, cue, response, and reinforcement within the classroom). Three studies of applications of reinforcement are reported which indicate the relation of this component to classroom management. The document also contains an example of classroom management, outlines of common learning theories, and a chart contrasting the various positions of the theorists. Related documents are RC 003 110 and RC 003 111. (DK)

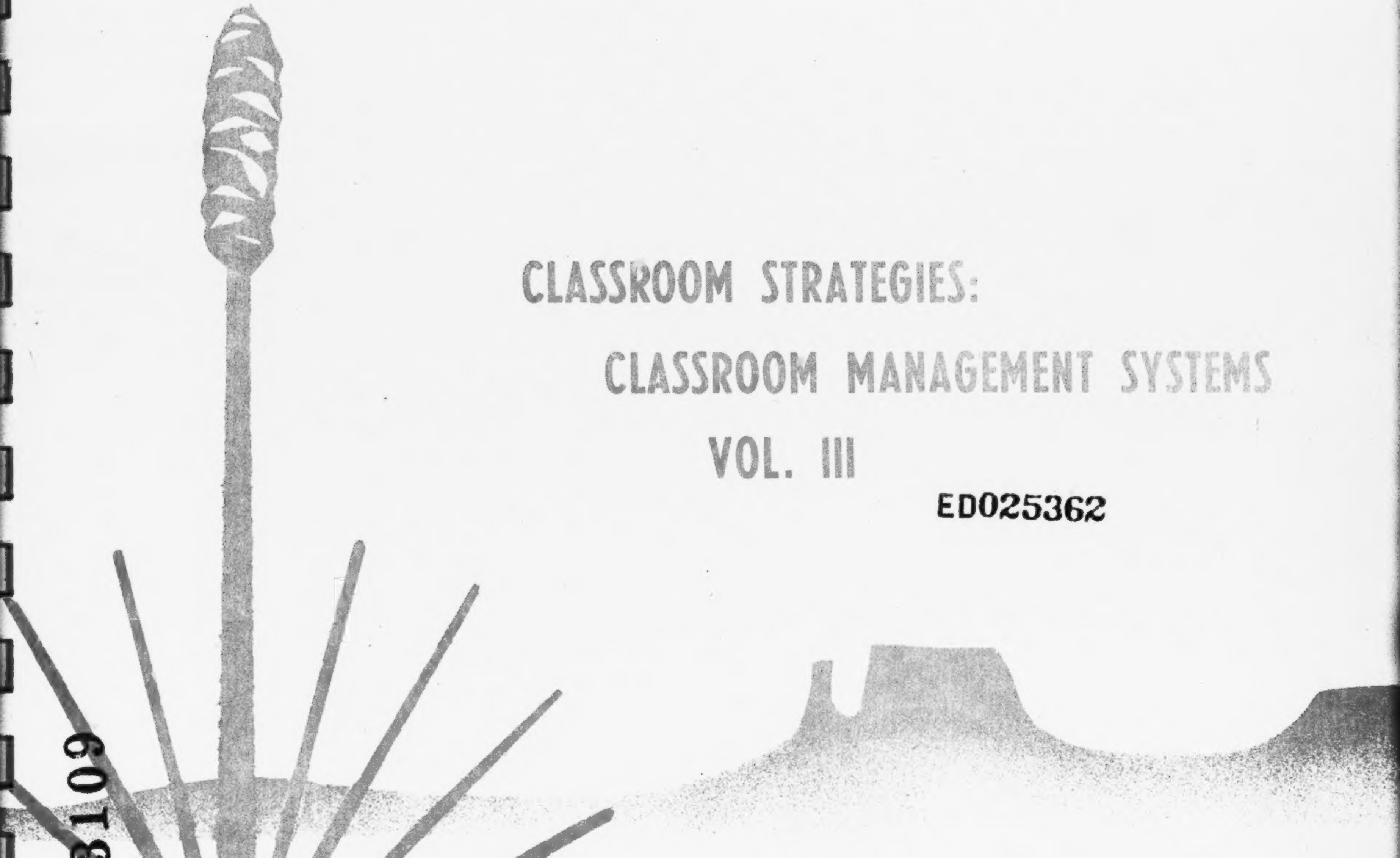
BR-6-2827
PA-24
OE-BR

RECEIVED
FEB 5 1969
NMSU
E.R.I.C.

SOUTHWESTERN COOPERATIVE EDUCATIONAL LABORATORY, INC.
Arizona New Mexico West Texas Oklahoma
INNOVATION DISSEMINATION
RESEARCH
SWCEL

CLASSROOM STRATEGIES:
CLASSROOM MANAGEMENT SYSTEMS
VOL. III

ED025362



RC003109

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

CLASSROOM STRATEGIES: CLASSROOM MANAGEMENT SYSTEMS

By Madeleine F. Speiss and Eleanor Leventhal

with:

Katherine A. Bemis
Asifa Rahman
Glenn B. Schroeder
Richard Thiel

Editor Consultant: Jules Shrage

We are especially indebted to Mr. Max Luft for insuring the statistical accuracy of the information reported here.

Suzanne Guilford and Louise Hayes deserve our thanks for their efforts as classroom observers.

Southwestern Cooperative Educational Laboratory, Inc.
117 Richmond Drive, N. E.
Albuquerque, New Mexico 87106

This publication is issued pursuant to terms of Contract No. OEC-4-7-062827-3078 with the Bureau of Research, Office of Education, U. S. Department of Health, Education and Welfare.

TABLE OF CONTENTS

Page

FOREWORD

Chapter

I. INTRODUCTION 1

II. DEFINITION OF CLASSROOM MANAGEMENT 7

III. SOCIAL CONTROL 15

IV. THE COMPONENTS OF LEARNING 21

V. DRIVE: MOTIVATION AS INFLUENCED BY CULTURE 25

VI. CUE 45

VII. THE RESPONSE 51

VIII. REWARD: THE NATURE OF REINFORCEMENT 57

IX. THREE STUDIES OF REINFORCEMENT: APPLICATION TO CLASSROOM MANAGEMENT SYSTEMS 71

Experiment 1: Learning as a Function of Feedback Condition 73

Experiment 2: Effects of Varying Quality, Amount, and Delay of Reward in the Classroom Situation 97

Experiment 3: Correlated Reinforcement 133

X. OUTLINE OF LEARNING THEORIES AND SUGGESTIONS FOR TEACHERS 145

XI. AN EXAMPLE OF CLASSROOM MANAGEMENT: TEACHING A CHILD TO SIT DOWN 159

APPENDIX I ESTIMATES OF VARIOUS POSITIONS ON PROBLEMS OF LEARNING 187

BIBLIOGRAPHY 209

PREFACE

While classroom management may be relatively new as an educational term and may not be most acceptable to many educators, it nevertheless expresses an area with which present day instruction must be vitally concerned. The most effective curriculum possible has little meaning in a classroom poorly organized and managed. The term "managed" as used in this manual does not necessarily imply a highly structured and a tightly controlled situation. Rather, it implies that the teacher in charge, by having adequate knowledge of content, an understanding of pupils and their backgrounds along with the psychology of learning, knows how best to handle the teaching situation for the particular content being presented. Teaching is recognized as not being the very simple process it was considered once.

The SWCEL staff, under the leadership of Dr. Thiel and his colleagues, has done considerable study in the area of classroom management. They have found that this entire area has received too little attention; specifically the application of special classroom management techniques in multicultural school situations has been virtually untouched. This manual proposes to furnish teachers with information and guidelines relative to pupil learning both in the affective and the cognitive domains, and in the area of social control. Although it is not purported to be a final product, it does perhaps represent the most forward point of the state of the art at the time of its publication. It is recommended for the use of all elementary teachers and is especially commended to those teaching in situations reflecting varied cultures.

Paul V. Petty

Paul V. Petty
Director

Albuquerque
June 1968

CHAPTER I

INTRODUCTION

Everyone is an expert on education. The very people who would not dream of making prescriptions for the physician or lawyer blithely sing out their opinions on what to do about our schools. It is a large and complex problem. Perhaps a few suggestions may shed some light on this particular sphere of social behavior. First of all, from a molar, political perspective, it might be argued that education, largely supported by local taxation, is one of the few areas in our social life in which people of all persuasions can feel some control and autonomy, but mostly a sense of personal participation in political or community decision-making.

A sophisticated appraisal of the various social and political channels of expression available to the average citizen in a large, relatively impersonal, mass society would support the idea that the field of education, like the town hall democracy of yesteryear, provides a more viable experience in grass-roots political involvement. In some extreme instances, the school system offers a target for the displaced hostilities that some inner-directed types may feel toward the remote, rational, and highly bureaucratic levels of political activity.

Is teaching a profession in the sense that its members have enough specialized knowledge to separate them from the lay public in terms of mystification and status?

How well can the management of one's professional image be realized by the teacher who must maintain her status through a careful separation of backstage and front stage* areas of control with respect to her audiences?

Education, the second largest (if not oldest) profession, is a mass industry. Unfortunately, some theorists nowadays tend to view future occupational roles for teachers as akin to those of technicians. For example, certain media paradigms for teaching delegate teachers to componential positions within a system basically designed for technical use of equipment and systems engineering, which are built by experts who formulate these systems, as if--with an omniscient eye--they can anticipate all possible exigencies that may arise in the sequence chain of informational presentations.

Lest you view with horror such a portent, look at the present. Those of you with the experiences of a relatively large and impersonal school system may be quite cognizant that all too often it is not the best teacher who is rewarded by the system.

The teacher who is creative, or intensely involved with her pupils through those endless hours of patient teaching, conscious of every nuance of a child's actions, or sensitive to the myriads of feeling tones vaguely suggested in the fleeting shadow of a child's countenance--the teacher with the tight, anal sphincter, whose children's desks are aligned so as not to offend the janitor, or whose bulletin boards conform to margin requirements of the district "art" manual, who is compulsively punctual, who doesn't leave ink blots on her classroom register, who doesn't have many parent visitors and who is a paragon of obedience and conformity--she is most apt to be favorably evaluated in terms of efficient administrative systems management, even though such systems often are irrelevant to the needs of children. Therefore, the model of the good teacher in the conventional setting may--like the slave who fears freedom--become the likely prototype personality to be locked into a system of "hardware" and "software." The latter term may be as descriptive of her own cerebral atrophy, as of the materials she may have to present.

---

*For an excellent account of how groups manage impressions for audiences, see Erving Goffman, The Presentation of Self in Everyday Life (New York: Doubleday Anchor Books, 1959).

The fantasy entertained in this manual is that teachers should be professional, or at least should strive for the kind of professional stature which will be commensurate with the dawning realization in our society that education may be a worthwhile way of allocating our nation's financial resources when the day arrives that we will somehow extricate ourselves from the swampy muck of distant jungle lands.

If a teacher is to become part of a system (other than one imposed from without) it should be a system in which she is the head--not the trigger. Such a system we envision is one in which the teacher aligns herself with the spirit of the social and behavioral sciences. An integral part of this system is her own development in terms of increased intellectual skills, and greater awareness of current, exciting research plays a major role.

If you feel confident that you can distinguish a behavioral objective from a homely platitude, then you are ready for Volume III.

Already, we are confident that you probably have concluded that to learn how to be comfortable with behavioral objectives is not so much of a feat of intellectual prowess as it is a perspective and a point of view. We hope you are sufficiently reinforced so that your point of view is not extinguished.

In fact, such things as "reinforcement," "extinction," and, of course, "learning" are the next topics of concern at this stage. You immediately will see that so far you have viewed one side of the coin. When you flip this coin by turning the page, perhaps that side will become as well etched in your thinking as the first.

Let us oversimplify what we are doing for the moment before taking the next step.

Once a teacher is confident that she can produce necessary behavioral objectives for her classroom children, then these objectives become criteria--or standards by which to gauge the acquisition goals for the classroom group. After this, the teacher needs to apply a systematic schedule for reinforcing all or some of the sequences of acquisition associated with these criteria (behavioral objectives). Taken together, we have the two main components of our classroom management system.

The degree to which a teacher can manage successfully such a system should, in the long run, enhance the professional image of the teaching profession, stymie the critics, and gain the overdue respect from other professional groups. Ultimately, it is by the fruits of one's labor that we judge one's worth--particularly in our work-ethic society. When children learn and like to learn, when the glaring discrepancies among children of different ethnic groups are eradicated, then we can surely be proud to call ourselves teachers.

CHAPTER II

DEFINITION OF CLASSROOM MANAGEMENT

Volume II of this manual has demonstrated the importance of the precise identification--in behavioral terms--of our educational goals. A comprehensive and specific set of "behavioral objectives" was presented, describing a number of behaviors which a child is expected to learn as a result of his educational experience in the first grade.

It is not accidental that the word "behavior" has been used three times in the preceding paragraph. Education may be defined as a directed learning experience, and "learning," is more objectively defined as a "relatively permanent change in behavior potentiality as a result of reinforced practice" (Kimble[30]).

Since this definition is fundamental to the understanding of the principles and procedures of classroom management systems, we must discuss it in some detail.

Psychologists have proposed many theories to account for the "underlying mechanisms" of learning. Concepts such as "neural connections" and "field reorganization" are called theoretical constructs, because their existence is hypothetical and not yet proved. At present the most accurate indication we have about what somebody learns is by his behavior--what he actually does. If we give a child a number of addition problems, and if he invariably gives us the correct answer, then we say he has "learned to add." If a child plays with other children, shares his toys, participates in group activities, then we say he has "learned to get along with his peers." If a child does not sit in his chair, throws his crayons at the teacher, and wets his pants, then we say "he has not learned self-control." And if a child cannot articulate the words in his primer, we say he has "not learned to read." In each case the child is evaluated on the basis of what he can _do_--on how he performs; in each case the individual's behavior reflects most objectively what he has or has not learned.

There are a large number of "relatively permanent behavior changes" which every child must learn. He has, after all, little technical or social knowledge; he must be taught a great many _appropriate_ _behaviors_ to become a useful, functioning member of his society.

> . . . the vast majority of behavioral changes, and particularly those identified as underlying the performance of socially useful work, are generally considered to be the province of the educational system (17, p. 237).
>
> . . . by this is meant that arrangement of people and conditions which is needed to bring about the changes in the human individual, attributable to the process of learning, which transform his from a dependent child to a productive adult member of society. In other words, the educational system has the learning of the individual as its primary mission . . . (17, p. 240).
>
> . . . the fundamental reason for an educational system is to manage learning so that it will occur most efficiently (17, p. 238).

Within this system, the teacher occupies an essential role:

> The teacher is the manager of the conditions of learning. What he says to the student comprises the verbal directions and also the verbal stimulus content of the learning situation. What he points to or has the student look at in the surrounding environment becomes a part of the stimulus situation for learning. . . . In more complex educational systems, . . . the teacher may be aided by a number of gadgets, and also be a number of other people. But the essential function remains one of managing the conditions of learning (17, pp. 240-41).

The management of learning, then, may be described as a systematic program of behavior modification, conducted largely by the individual teacher, in the classroom situation. "The objective of this management is to insure that learning will be efficient, that is, that the greatest change in the student's behavior will occur in the shortest period of time" (17, p. 238).

Classroom management systems are essentially procedures for arranging the classroom environment so that children learn what the teacher wants to teach them in the healthiest and most effective way possible. A number of basic issues are raised by such management systems.

First of all, a great many different kinds of behavior are learned in the classroom situation. We may identify three general categories of such behavior; the first two classes parallel the affective and cognitive domains, which were intensively analyzed in Volume II.

The cognitive domain included the curriculum material (the subject matter)--those technical skills and conceptual abilities which comprise the largest part of the teacher's set of behavioral objectives. Reading, writing, ability to communicate verbally, and mathematical skills are all included in this category.

The affective domain includes many social and "emotional" behaviors which the child learns largely through interaction with his teachers and with other children. Feelings, attitudes, values, and "self-concepts" are all subsumed in this category.

In a third category are designated those behaviors which are necessary if any learning is to take place in the classroom. In most classes at present, one teacher supervises the education of many pupils; consequently, the pupils are required to demonstrate certain self-controlling behaviors which are specifically necessary in the school environment. The child must learn, in a word, self-discipline. Ordinarily, he must sit in a designated place for long periods of time, face the teacher and attend to what is being said and done, refrain from fighting with other children, etc. Each child must learn to act in a socially acceptable manner so that all the children may be allowed to learn. This category of discipline, or social control, includes not only these socially appropriate behaviors, but also the many undesirable behaviors which children often display. A child who is "troublesome," who cannot follow directions, and who constantly exhibits disruptive behavior poses one of the biggest problems a teacher has to face. How should the teacher deal with such problems? What is the best way to eliminate patently undesirable behaviors? These questions will be discussed more intensively in later chapters.

Although on paper the cognitive and affective and social control domains may be separated for the sake of clarity and categorization, they are, indeed, organically related. A child who has positive feelings toward himself, his teacher and his school will feel motivated to work to his capacity.

A child's chances of success in school are strongly contingent upon his attitudes toward school in general and his classroom and teacher in particular. The child's relationships with his teachers can determine his success in both the affective and cognitive domains. In many cases, even at the university level (recall your attitude toward classes and professors and see if it correlates with your level of achievement and enthusiasm), a student will work hard because he likes his teacher, because he wants to meet her expectations and obtain her praise.

It is evident that systematic procedures are necessary for teaching such a variety of desired behaviors and that classroom management programs can greatly benefit both teachers and pupils. Yet there has been some resistance to the application of these methods in the classroom. Many people object to behavior management in education because they do not completely understand the rationale, the implications, and the effects of such programs. It might be instructive to discuss some of these objections, in view of what has been said about the goals of education and about the role of the teacher in the learning process.

First, and most important, "behaviorism often is accused of being sterile or heartless--in that it treats the individual as an automaton incapable of individuality" (Krutch^{34}). To manage or to manipulate children sounds too much like an experimenter amorally controlling a rat, creating a programmed automaton who cannot think for himself but is rather a pawn to the whims of the controller. However, whether the teacher realizes it or not, she is constantly manipulating the child and influencing his behavior.

It is the purpose of the teacher to change the behavior of children; teachers always have controlled the behavior of their pupils. Furthermore, it is evident that in many cases the traditional techniques of teaching and discipline have been neither healthy nor efficient. The best example of this is the use of punishment as the most accepted method of social control.

Ours is a punishing society; we punish our criminals and our children. For years, the most widely applied "behavioral law" in education has been "spare the rod and spoil the child." However, several lines of research have shown that in most cases punishment does not eliminate an undesirable behavior, but only temporarily suppresses it. Even when punishment is effective in controlling behavior, the worthwhile effects usually are offset by an extraordinarily long list of deleterious side effects, some of which may permanently impair normal emotional development. Punishment alone, or the threat of punishment, is perhaps the worst way of attempting to facilitate learning and to control behavior.

An alternative set of procedures is based upon a large body of recent psychological evidence, which suggests that learning occurs most efficiently by reinforcing "correct" behavior rather than by punishing "incorrect behavior." All the methods in this volume use rewards, not punishments, for effective learning.

An atmosphere of mutual love and respect is demonstrably more conducive to learning in the classroom than is a teacher-pupil relationship based upon fear and admonition. It is not the goal of this manual to tell teachers how to transform children into Anglo stereotypes or manipulate them as if they were non-human objects, but rather to acquaint teachers with aspects of reinforcement which they currently are using without being conscious of them. Furthermore, the intention of this manual is to suggest effective strategies for working with culturally divergent children.

By examining a few more reasons for teachers' hesitations in using classroom management programs and by presenting some counter arguments,

we may gain a more complete picture of the current situation. Psychological jargon tends to sound alien, technical, scientific, and therefore, is incomprehensible, and perhaps irrelevant. However, the discoveries and observations made by pscyhologists do have a great deal of relevance to the classroom and, hopefully, are presented in a meaningful way in this manual. Using a classroom management program may demand more work; however, the degree to which the teacher subsequently can improve her teaching and classroom atmosphere justifies all additional effort necessary. Teachers often are worried that a specified classroom management system will restrict their behavior, spontaneity, and their possibilities for innovation. The reverse is true because a more efficient method will be used. The object in employing a management system is, however, to attempt to introduce and carry out a program which can best educate the children.

Despite the fear on the part of some teachers that experimenting with their charges may have deleterious effects, the evidence presented by SWCEL strongly suggests that such fears are unfounded.

One need only peruse the anecdotal materials found in the Appendix I prepared by the experimental teachers to be convinced that innovations which tamper with the "classroom business as usual" do not necessarily harm the children.

To lend additional support to these statements, a major SWCEL study, reported in this volume, indicated that in the affective domain, as well as in mathematics achievement, children in the experimental conditions showed a significantly greater gain than did those children not experimented upon.

The problems of the teacher, even when defined in objective behavioral terms, are enormously varied and complex: "How can the student be motivated to begin and to continue learning? How should the direction of his interest and effort be guided? What can be done to assess the outcomes of learning?" (Gagne[17]). How can the teacher arrange the conditions of the classroom to insure an optimal environment for learning? What strategies should the teacher adopt for modifying various kinds of behavior?

In the following pages some possible answers to these and other problems will be analyzed. Since the area of social control is so important, the next chapter is entirely devoted to a discussion of it. Then an outline will be presented, describing the components of learning, so that the teacher may better understand the nature of the learning process. Finally, a number of specific techniques and procedures will be illustrated which the teacher can use in her own classroom. The results of a number of research projects in the area--some of which have been carried on by SWCEL--also will be described.

Teachers teach because they care about children and feel education is very important if America is to have an informed, educated population. The goal of education is to help every child develop his highest or most desirable potential so he can make his own decisions and govern his life. It is our hope that this manual, offering strategies and suggestions for teaching children, particularly for those with culturally diverse backgrounds, will help to achieve this goal.

CHAPTER III

SOCIAL CONTROL

From an educational perspective, the means by which a classroom group maintains an equilibrium point is of central interest to the teacher. One simple maxim of learning is that it cannot take place unless the learner is attending. In the classroom, unless an atmosphere conducive to learning can be established, the learning process cannot take root. We tend to confer a "non-person" status upon young children--particularly in our society. Essentially we do not recognize that a child has individual integrity, even though a host of educational platitudes espousing the sacredness of the whole child surrounds the doctrines of educators. When a human--be he a child, a minority group member, a leper, or psychotic--has a non-person status, then other adults have the perogative to manipulate, control or even speak Edgar Bergen style for the non-person, providing the caretaker has the right license--that of the parent, teacher, doctor, etc.

Most social systems will strive to restore a state of equilibrium whenever normal group functioning is disrupted. It is imperative for a social system to define and develop its objectives if those objectives are to fulfill their purposes and actualize themselves. Mechanisms controlling group conduct tend to serve as regulating devices imposing socially approved limitations on the manner in which objectives are achieved. Controls do not necessarily hinge upon the legitimization of authority, but may actually stem from the group's social goals, norms, and equilibrium-established interactions.

Social interactions are an integral part of classroom activities permeating every aspect of learning. The patterns of teacher-pupil and pupil-pupil interactions which evolve define the means for actualizing and maintaining group objectives. In addition, implicit goals, which frequently are informal, also guide the students toward the appropriate avenues of success. "To develop such a 'love of learning' the student must be progressively weaned from dependence on the teacher or other agents external to himself" (Gagne[17]). Thus, a major task in the personal-social adjustment of the student is facilitating his movement from dependency to independence. As the student is directed to becoming increasingly responsible for his actions, he learns the boundaries and use of socially approved means for achieving his goals.

No pupil is immune to external events. The classroom can serve both as a source of disturbance to the pupil, with which he must cope, and as a source of reward and self-actualization. By its system of values and by the manipulations of rewards and punishments, the group encourages the gratification of certain needs and precludes the achievement of others (Brembeck[6]).

> What children reflect in classroom behavior, of course, are the norms which they have learned in their culture. Children bring with them through the classroom door a predisposition to behave as they do in groups. What the teacher can do to turn group relationships toward learning is always conditioned by the behavior pattern which children bring to school. The skilled teacher, then, seeks to use the cultural predispositions which the children bring in order to promote learning (Brembeck[6]).

Interactions between the individual and his peers, in conjunction with active participation in classroom activities, continually modify his state of equilibrium. The child almost always comes to terms with the environment because it affords the means by which his self-realization may be obtained.

Within the classroom, uniformity appears to be the homeostatic condition, wherein disequilibrium typically motivates efforts to achieve consonance. Pressure toward unity serves as a solution for potential interpersonal conflicts among the pupils and between teacher and students.

The conventional wisdom of the educational practitioner holds that a teacher, in loco parentis, has considerable control over a child. Teachers are privileged to manipulate a child, but seldom may use physically coercive techniques with him.

It commonly is believed that primary-grade children are teacher-oriented rather than peer-oriented. The child has not been socialized away from the intense dyadic relationship enjoyed with his mother for whom the teacher is the likely surrogate.

Research at SWCEL does not entirely confirm the hypothesis that the child is being too immature to be amenable to peer-group influence. A child questionnaire designed at SWCEL produced results which indicated that some first-grade children definitely were concerned about their peers and placed them above self-interests in some cases. Therefore, it is not easy to generalize about whether or not a child is so immature at a grade one level that his responsiveness may be confined to his own self-centeredness and strong dependency needs for the mother surrogate (teacher). As a matter of fact, because of the nuclear family constellation that typifies middle-majority culture in which grandmas, aunts, uncles and other extended kin do not interact frequently with the child, it may be possible that minority group children may be more amenable to the influence of peers or others at an earlier age. For one thing, many traditional groups (certain Indians, Spanish Americans) make much greater use of older siblings and cousins of various degrees who do most of the child care. Modernistic middle-majority groups are more apt to have the mother be the baby sitter, particularly in the middle-class, at least during the child's preschool years.

A teacher, then, might consider the possibility that, if she is working basically with more tradition-oriented ethnic-group children, the possibilities of peer cooperation, peer-group control and peer "norm-standing" may be effective forms of social control.

Many newly formed groups develop their own normative standards around the goals they explicitly or implicitly construct from the matrix of their interactions. Admittedly, first-year children do not have clear-cut, stable and farsighted goals. However, the rudiments for this important human process are found among young children. In our SWCEL studies, for example, a disadvantaged Spanish American boy was more interested that his whole class be rewarded rather than himself for meeting the requirements of a certain learning task. On the other hand, a little Anglo girl preferred the reward for herself and was not concerned with whether or not the group received its reward.

The immense physical size of the average teacher compared to the first-grader insures that from her Olympian heights there is, in the final analysis, no question of who has the power to control.

Basic rules should be established to insure a minimum degree of chaos so that children can attend. This can be done through carefully defining the behaviors, such as "the class will be quiet for five minutes to listen to a recording of sounds." This objective can be tested easily afterwards. If a certain percentage of the children can recall X number of animal sounds from the record according to a predetermined percentage of correct answers decided by the teacher, then a reward can be given to the whole class. It will not be long before children will set their own controlling devices into action, providing the reward is sufficient.

In this process various superordinate and subordinate roles will emerge, probably based upon certain specific activities, although some leadership roles may be generalized to several situations.

Discovering the circumstances under which patterns of these sorts develop will be a refreshing and practical learning experience applicable to the teachers' further planning.

Once such roles become established you will be amazed to find that they might provide quite stable patterned interactions--even among children.

Thus a form of social control among a natural group of children should develop. Don't forget that just because certain external constraints are placed upon you, it is possible to develop a democratic, consensus-oriented atmosphere in your classroom. You actually are controlled for the most part through a boss scheduling you, or by bells, buzzers and what not--and formally by regulations, codes, etc. On a more subtle level, you are also a member of a peer (colleague) group.

If you feel like working harder or longer than all the other teachers put together, they may resent and shun you. Unless you bring in the brownies or fudgecakes when your turn comes, the group will send you some unpleasant signals, and you may be pegged as a deviant of some sort. If you consider those possibilities for a moment, you may decide that group pressure--although possibly more effective with adults--still may play a major role in classroom control.

Omnipotence on your part is not always required. Don't be afraid to let some control develop from the children's efforts. In fact, the degree to which group initiated control is effective may reflect the motivating strength of your teaching, because the conditions surrounding the children, if pleasant, can help crystallize group sentiment.

To briefly state some points, remember that:

1. All social groups have means of social control, and social control is necessary for attention, which is a prerequisite to learning.
2. Control does not necessarily imply authoritarianism.
3. First-grade children are capable of forming peer-group influence patterns.
4. Some culturally divergent children may be more capable of group work than are Anglos, but caution should be exercised with respect to the subculture with which you are working. A practical way to be sure is to be empirical in your approach to the new classroom group you will meet in the fall.

CHAPTER IV

THE COMPONENTS OF LEARNING

> The learning conditions to be described . . . have implications for the management of learning. How can the student be motivated to begin and to continue learning? How should the direction of his interest and effort be guided? What can be done to assess the outcomes of learning? These are questions that pertain to the management of learning and the learning situation. . . . Clearly the proper exercise of these functions in an educational setting by a teacher requires that he understand the conditions of learning. Knowing these conditions makes it possible for the teacher to reach the proper decisions about what achievements the student is being motivated for, and to give suitable guidance concerning the possible directions of future learning that may be available to the student. In addition, the teacher must know the conditions of learning that have entered into any new attainment of the student in order to assess such achievement realistically (Gagne[17]).

"The field of human learning," wrote Miller and Dollard[36], "covers phenomena which range all the way from the simple, almost reflex, learning of a child to avoid a hot radiator to the complex process of insight by which a scientist constructs a theory. . . . Throughout the whole range, however, the same fundamental factors seems to be involved . . . these factors are: drive, response, cue, and reward."

According to Miller's paradigm, in order to learn anything, a child must want something, see something, do something, and get something. This model illustrates very clearly what the components of learning are.

The response already has been defined as a behavior--what the child is expected to do; it is the teacher's specific behavioral objective! Drive or motivation has been defined in many ways; according to Miller and Dollard[36] it is "any strong stimulus which impels action." In this manual, however, motivation will be given a more general definition, as the child's readiness and willingness to learn; his interest and involvement in the educational situation; the degree to which he is attending to what is going on in the classroom.

Cues are environmental stimuli which are discriminated as being the occasion for the response. Rewards are defined as those stimuli, contingent upon the response, which increase the probability of the occurrence of that response.

A simple example will help clarify these definitions:

If we ask a child, "How much is one and one?", the correct, desired, appropriate behavior is the response, "Two." Before the child is taught to add, he may emit a variety of responses to the question; he might have answered, "What?", or "apples," or "hello," or simply not have answered at all. The probability of his responding correctly is very low. Now, suppose we teach the child the fundamentals of addition; we teach him to verbalize numbers, relate them to objects, etc. In other words we teach him that "one and one are two." We ask him a number of questions involving that concept (e.g., "If I give you one apple, and then another apple, how many apples will you have?"). When we ask him these questions, and the child answers correctly ("two apples") we act very pleased, and we say "Yes, one apple and one apple are two apples. . ." After a certain amount of such training the probability that the child will respond correctly to the question is very high; he will invariably give the appropriate response "two" to any general question involving the addition of one object and another object. Because of our greatly increased "degree of belief" that the child will respond correctly almost every time, we can say that he has "learned to add one and one."

In this example, the response was a very specific behavior--verbalization of the word "two." The cue in this case was the question itself--a stimulus which signalled the occasion for the response. The precise identification of the reward is not as easy; it may have been the pleasant expression on the teacher's face which occurred only when the child gave the correct answer. Or it may have been that the child received some kind of satisfaction from getting the right answer. It is often not clear exactly what element of the reinforcement situation serves as the real "reward," but we can infer that the stimuli following the correct response reinforced that response, because the probability of the correct response to the cue increased when the reward followed it.

Now, what motivated the child to learn this task? His family and culture may have stressed the importance of doing well in school, so that the child was initially motivated to achieve. The child may have learned the task in order not to be embarrassed in front of the other children. Or the teacher may have arranged the situation so that the child learned that any correct response would be followed by some rewarding consequence--praise, attention, etc. In this case, the reward itself--the anticipation of the reward--was the motivator. In the next chapter the complex topic of motivation will be considered in great detail.

A most important point to consider, and one that will be repeated many times in this manual, is that behavior is controlled by its consequences. Whatever cues initially signal the occasion for the response, whatever motivation there is to perform the behavior, the presentation of an appropriate reward following a response will almost always result in a greater probability of the response occurring again, given the same stimulus situation.

In the next four chapters, the components of learning will be intensively analyzed.

CHAPTER V

DRIVE: MOTIVATION AS INFLUENCED BY CULTURAL BACKGROUND

Before learning can take place, the child must be motivated to learn: he must want to learn. A child will want to learn only that which is meaningful and important to him. It is the task of the teacher to discover what is meaningful to each child and then how to effectively present the material. In order to do this, the teacher must know about the child's background, learning styles, interests--in other words, what motivates him. In this chapter we will attempt to examine the various components and aspects of motivation.

> This broad conception of the motivational problem includes a consideration of the motives that make the student want to seek knowledge, to utilize his talents, to desire self-fulfillment as a human being, to relate to other people in a satisfying manner, and to become an effective "member of society" (17, p. 207).

The general problems of the child who finds himself "caught between two cultures" are integrally related to the whole area of motivation. It might be helpful to consider the culturally different child in relation to the culture with which he comes into contact when he enters the first-grade. The attributes of the "culturally disadvantaged" will be examined, followed by a consideration of their relevance to the teacher and her classroom.

Educators often approach the child of a different cultural background from the ethnocentric, biased, incorrect, and unfair point of view that the culturally different child is "deprived" or "disadvantaged." Thus, these children are not afforded the respect due them; and their many strengths and abilities are not recognized.

It is only relative to a certain culture that a person or group can be considered disadvantaged, not having the background or tools which will permit him to function adequately in that culture. It might be compared to putting a person who never played baseball on a major league team in the position of shortstop, without telling him the rules of the game (the customs of the society), the particular responsibilities included in his position (his role in society), and furthermore not giving him a baseball glove (a tool of the culture); and then, when his team is at bat, merely giving him the baseball bat (a tool of this subculture), but not telling him how to use it. Even if he were verbally told the rules and procedures before the game, it would be too much to expect him to be a competent member of the team. In order to function as a group, the team must practice continually. Similarly, in order to function adequately in any culture, a person must know the rules and the customs, folkways, mores, taboos, etc. He must be familiar with specific roles achieved and ascribed and the appropriate behaviors implied. He must also be familiar with the physical environs and tools of the culture (such as pencil, paper, chairs, sinks, and telephone.)

It has been continually stated that "disadvantaged" children have had an upbringing devoid of objects, shapes, colors, and verbal experience; that their homes, reflecting economic poverty, are empty--and therefore the child has not previously encountered traditional middle-class American artifacts (such as books, toys, household gadgets, etc.).

It seems highly unlikely that a child four to five years of age has encountered nothing in his 1,460 days of living twenty-four hours each day. Perhaps he has not encountered books, electric eggbeaters, or plastic beach buckets, yet still there must be objects in home, be they broken pieces of wood, crumbs on the floor, bugs, pots and pans, fabrics with colors and textures, growing plants, etc. The child's environment is not empty. The child may not be learning the middle-majority rules--folkways and mores, he may not receive the same early childhood training, and may not encounter the same child rearing techniques, yet there is not a void of experience; something is there.

This might be illustrated more dramatically by considering the Navajo child from an isolated, non-assimilated and non-acculturated community. He comes to the first-grade class without a knowledge of English, yet that does not mean that he has had no language experience. The child speaks the Navajo language, which has a complex grammatical structure. He has a large vocabulary, and he has an ability to generate and comprehend an infinite number of unique and meaningful sentences.

The child may not know how to use the sink in the classroom or hold a pencil or crayon, yet there are many things he does know and can do which are never demonstrated in the classroom. He may know how to herd sheep, milk a goat, prepare wool for weaving, weave a rug, and build a fire. But still this child is called disadvantaged and is often considered to be developmentally below his age level by the school systems and teacher education textbooks.

Within the classroom environment and relative to middle-majority norms the child may be deficient, but this is only relative to the majority culture. Within his own culture he may be of advanced development, mature and very capable. It is totally incorrect to state flatly that he is "deprived" and devoid of experience.

The culturally divergent child begins his path of potential conflict when he enters the first classroom door and encounters English, a second language, or a different dialect. There are bound to be numerous conflicts in values, folkways, mores, and modes of behavior which will present serious difficulties. In trying to conform to the classroom setting and demands, due to his differing training history he may not understand all the components involved. As Chase[10] has written: " . . . the structure of the language one habitually uses influences the manner in which one understands his environment. The picture of the universe shifts from tongue to tongue." Chase states further that "Speakers of different languages see the Cosmos differently, evaluate it differently, sometimes not by much, sometimes widely. Thinking is relative to the language learned."

The middle-majority Anglo schoolroom is quite alien to the culturally divergent child--the materials and demands are imcomprehensible and unreasonable. Even for Anglo first-graders much of the initial year is spent in socializing or acclimating the new members to the elementary school society. They are taught to listen, to raise their hands, to respond when called upon, to request permission before engaging in certain activities, to follow directions, to work in a group, etc. All of the above-mentioned require practice, experience, and a will to cooperate. But for the Anglo child, these tasks are not too difficult as they emanate from his own society.

When children of ethnic minorities enter the middle-majority school, there will necessarily be conflicts and a need for mutual adjustments. The teacher cannot expect or demand that these children immediately know how to remain seated, follow directions, remain quiet unless called on, or restrain from examining objects in the classroom. Traditional teacher expectations will have to be modified in order to shape and acquire suitable classroom repertoires. If the teacher is aware and sensitive to the child's cultural background, she will likely be more apt to understand and accept his differences.

This does not mean that the teacher cannot teach her traditional curriculum content. It means that if she desires to make the curriculum at all worthwhile, meaningful, and comprehensible, she will have to be willing to modify her traditional teaching methods, curriculum content, and initial expectations. She must accept the children as they are and must initially mold her curriculum to the children's developmental levels and their needs. Ausubel[2] has noted that "a curriculum that takes the readiness of the culturally deprived child into account always takes as its starting point his existing knowledge and sophistication in the various subject-matter areas and intellectual skills, no matter how far down the scale this happens to be." This can be facilitated by bringing to the curriculum elements of the pupil's cultural background and home environment, which can be done in every curriculum area. Resources from the child's environment can become an integral part of the curriculum. By relaxing the child and eliciting a whole range of responses, the teacher can observe and then reward selectively. From this point she can begin shaping the child's behavior; acculturating him to the school society (this does not necessitate that the school society be Anglo school society)--this means that a child may be acculturated to a new environment with new expectations and new responsibilities.

Upon entering the public school, the "unacculturated" child is expected to become oriented to a value system emphasized in the dominant culture. Some of these values are:

1. He must place a value on competitive achievement and climbing the ladder of success.
2. He must learn time orientation that will be precise to the hour and minute, and he must also learn to place high value on looking to the future.
3. He must accept the teacher's reiteration that there is scientific explanation for all natural phenomena.
4. He must become accustomed to change and must anticipate change. (The middle-class Anglo culture teaches that "change," in and of itself, is good and desirable!).
5. He must "trade" his shy, quiet, reserved, conforming and anonymous behavior for socially approved, aggressive, competitive behavior.
6. He must somehow be brought to understand that he can, with some independence, shape his own destiny, as opposed to the tradition of remaining an anonymous member of his society.

Too many teachers are inadequately prepared to understand or accept the dissimilar cultural values. The values of most teachers are middle class. This means that teachers come from homes where the drive for achievement causes parents to "push" their children to climb the ladder of success; where "work for work's sake" is rewarded; and where emphasis is placed on building for the future.

The Indian child comes to the classroom with a set of values and a background of experience radically different from those of the average Anglo child. To teach the Indian child successfully, the teacher must be cognizant of these differences and must above all seek to understand, without disparagement, these ideas, values, and practices different from his own.

Table I summarizes many conflicts in values between the traditional Indian or Spanish American child and his middle-class Anglo teacher.

Table II summarizes some of the traditional differences in value orientations between traditional Spanish speaking and middle-class Anglo Americans.

Table III indicates a scale of acculturation and the very stages of change from the traditional Spanish American to full Anglo American.

From these tables it may be seen that different cultures emphasize different patterns of behavior; that behavior appropriate in one culture may not be appropriate in another. Unknowingly, the teacher may create motivational deterrents to learning by arranging classroom situations which are incompatible with the norms of the child's culture.

An example of this problem of conflicting demands can be illustrated in the classroom in which the teacher attempts to foster student achievement by encouraging competition, individual excellence, and individual

TABLE I

CONFLICTS IN CULTURAL VALUES

American school teachers are sure to place great value on these practices.	Children from traditional Indian families may be said to have accepted general patterns as described below.	Children from traditional Spanish American families may be said to have accepted these general patterns.
Mastery over Nature. Men must harness and cause the forces of nature to work for him.	Harmony with Nature. Nature will provide for man if he will behave as he should and obey nature's laws.	Subjugation to Nature. An often observed reaction in the traditional Spanish American was, "If it's God's will."
Future time orientation. All living in our society is future oriented.	Present time orientation. Life is concerned with the here and now. Accepting nature in its seasons, we will get through the years, one at a time. "If the things I am doing now are good, to be doing these same things all my life will be good."	Present time orientation. For the traditional Spanish American family, the important goal of life was going to heaven after death. One only passed through this temporal life to receive his "reward" in the next.
Level of aspiration. Climb the ladder of success. Success is measured by a wide range of superlatives: first, the most, the best, etc.	Level of aspiration. Follow in the ways of the old people. Young people keep quiet because they lack maturity and experience. This de-emphasizes experiment, innovation, and change.	Level of aspiration. "To work a little, rest a little." Follow in one's father's foot steps. Be satisfied with the present.
Work. Success will be achieved by hard work.	Work. One should work to satisfy present needs. Accumulating more than one needs could be construed as selfish, stingy, or bigoted.	Work. Work to satisfy present need. The Spanish American was particularistic in nature. He operated on emotional response rather than subordinating the individual to the societal institution. A businessman looks first at himself as a brother to the man who is asking for credit, and secondly as a businessman who is dealing with a customer.

TABLE I (continued)

American school teachers are sure to place great value on these practices.	Children from traditional Indian families may be said to have accepted general patterns as described below.	Children from traditional Spanish American families may be said to have accepted these general patterns.
Saving. Everybody should save for the future. "A penny saved is a penny earned." "Put something away for a rainy day." "Take care of the pennies and the dollars will take care of themselves."	Sharing. One shares freely what he has. One of the traditional purposes of the Shalako was that a man could rather anonymously provide a ceremonial feast for the village if he were able to do so.	Sharing. Traditional pattern included sharing within the extended family group. In cultural transition, Spanish Americans suffered considerable economic poverty. Those established in the dominant culture accepted Anglo values in sharing.
Adherence to time schedules."Take care of the minutes and the hours will take care of themselves."In practice, we have become so enslaved to time schedules, we might be termed "clock watchers."	Adherence to time schedules. Time is always with us. The unhurried inexactness of the Indian with appointments has led to the expression, "He operates on Indian time."	Adherence to time schedules. The expression for "the clock runs" translated from the Spanish is "the clock walks." It has been said that this explains the "manana attitude" which Anglos have observed in Spanish Americans.
Acceptance of change. Change, in and of itself, is accepted as modal behavior.	Reaction to change. We may follow in the old ways with confidence.	Reaction to change. We may follow in the old ways with confidence. The reason may not be at all the same as the Indian's however. This life on earth is endured only to win eternal life in Heaven.
Scientific explanation for all behavior.Nothing happens contrary to natural law. There is a scientific explanation for everything.	Non-scientific explanation for natural phenomena. Mythology, fear of the supernatural, witches, and sorcery may be used to explain behavior.	Non-scientific explanation for natural phenomena. Witches, fears, and non-scientific medical practices were used to explain behavior.

TABLE I (continued)

American school teachers are sure to place great value on these practices.	Children from traditional Indian families may be said to have accepted general patterns as described below.	Children from traditional Spanish American families may be said to have accepted these general patterns.
Competition. Aggression. One competes to win. Winning first prize all the time is a coveted goal.	Cooperation. Remaining submerged within the group. Traditionally, a man did not overtly seek offices of leadership or attempt to dominate his people. In sports, if one won once, he was ready to let others win.	Humility. Acceptance of the status quo. Submission, might categorize behavior.
Individuality. Each individual shapes his own destiny. Self-realization for each person is limited only by his capacities to achieve.	Anonymity. Accepting group sanctions, "sinking" the individual in the group, and keeping life rigidly routinized, all these place primary emphasis on conformity.	Obedience. The Catholic Church kept life routinized, placed emphasis on obedience to the will of God.

TABLE II

DIFFERENCES IN VALUE ORIENTATIONS

TRADITIONAL SPANISH SPEAKING	MIDDLE CLASS ANGLO-AMERICAN
1. Present time orientation	1. Future time orientation
2. Being	2. Achievement
3. Work to satisfy present need	3. Work for work's sake
4. Dependency	4. Independence
5. Belonging to the family	5. Individualism
6. Subsistent in economic orientations	6. Profit-making and saving in economic orientations
7. Lack of competition	7. Competition as focal motivational structure
8. Retinence for change	8. Cult for change
9. Interpretation of natural phenomena--non-scientific	9. Interpretation of natural phenomena--exclusively scientific
10. Low level of aspiration	10. Climb the ladder of success

TABLE III

SCALE OF ACCULTURATION: SPANISH AMERICAN INTO ANGLO-AMERICAN

Spanish American ----- ----- To ----- ----- Anglo-American

	Traditional	Low	Medium	High	Full
RELIGION	Usually Catholic Life Hereafter (Blind Faith)	Usually Catholic Life Hereafter (Blind Faith)	Catholic; Some Protestant (More enlightened faith)	Catholic or other denominations (Rational faith or weak churchgoers)	Catholic or other denominations (Rational faith; agnostic; atheist)
FAMILY	Extended family Large Autocratic: Counsel of Eldest Member	Extended family Medium to large Autocratic	Some extended relations Medium in size Less Autocratic	Very little extension into economics Medium in size Paternalistic	No extended family Small to medium size Paternalistic or democratic
EDUCATION	Illiterate or barely literate (Peon) Ruling class refined and polished (Non-existent now)	Speak English brokenly Mothers teach girls-Fathers teach boys Low elementary Blind faith in education	Both parents speak English Elementary & High School Some value to education	Some parents have college education Anglo middle-class value to education	Has lost contact with ancestral culture except in folklore
ECONOMICS	Agrarian Subsistence level Current high proportion on welfare	Own plot of land Unskilled labor Subsistence income Welfare, high proportion	Ranching & farming. Semi-skilled; skilled. Small businesses. Lower professions Low to average income	Professional. Larger business Clerical & kindred Average to above average income	Has lost contact with Spanish-American practices
HEALTH	Folkway medicine & practices "Superstitions" Herb medicine Poor sanitary facilities and knowledge	Folkway medicine. Patent medicine. Little professional medical attention except welfare cases. Poor sanitary facilities	Some folk medicine. Professional, medical, & hos- Fair sanitary facilities	Professional medical & hospital attention	Follows major-culture beliefs & practices
POLITICS	Peon--uninterested Patron--sharp politician (both non-existent) Now uninterested & think of politics as form of recreation	Lower class uninterested (recreational concept); or interested only at local level Higher classes sharp politicians at local & county level	Lower class uninterested (recreational). Middle class value on franchise; local political boss; hold county offices; few hold state offices	Lower class uninterested (recreation). Middle--value on franchise; local & county political bosses & offices. Upper-middle--state political bosses	Practice major-culture participation
RECREATION	Family. Communal. Non-commercial	Family. Communal. Some commercial	Little family recreation. Non-communal. Commercial	Very little family recreation. Non-communal. Commercial	Has lost contact with early culture; participates in major-culture activities

recognition of outstanding pupils. The conflicts discussed may be attributed to the teacher's attempt to foster pupil achievement using the most effective way she knows of--which she has learned from her own culture. If the teacher would become aware of the pupils' cultural methods of encouraging achievement, she could better motivate them and thereby improve the effectiveness of her teaching.

Competition has become an end in itself for most middle-class Americans. However, the cultural role of reinforcing competitive behavior is neither universal nor characteristic across different social strata. Cumulative pressures to achieve from parents and peers are typically absent in culturally divergent children; the manifestation of rivalry is often followed by withdrawal of attention and approval. Even the games by which middle-class society fosters competition are not prevalent among ethnically divergent populations. Receiving little or no encouragement for higher skills and educational achievement, the culturally different child becomes quite apathetic to the school environment.

The cultural role of reinforcing competitive behavior may be further clarified by contrasting American middle-class attitudes toward rivalry with cultures where competition is discouraged. An example is the Zuni Indian who sees his activities as part of the group. This is equally true of the Hopi, where any form of rivalry for reward and recognition is met with discouragement. In both cases leadership and rivalry are typically avoided.

Although competitive standards give little reinforcement to the child who fails to excel, our educators continue to foster competitive behavior in order to prepare the youngster for the highly competitive world where only the first to cross the finish line reaps the best reward. Generally, children of culturally diverse populations are the most severely penalized in the schools, because they don't possess middle-class values and behavior of the dominant group. The few children who try to compete frequently find their efforts leading to disappointment, frustration and widespread feelings of inadequacy. The child attempting to conform to school expectations by adopting the teacher's values, working for and accepting recognition and engaging in competition, generally will be ostracized by his peers and perhaps his parents, because he is deviating from the norms of his culture. The child's behavior may be interpreted as a rejection of his own culture and values. Thus, this child is caught between two cultures and two conflicting standards of behavior and sets of values.

The teacher must be aware that she will be creating conflicts in the child if she expects and demands that he conform to the Anglo school norms. Rather than attempt to remake a child and his value systems, it would be far better if the teacher would become familiar with his value system and attempt to operate, to some degree, within that system. By doing this, at least the children would be able to take part in school activities without compromising their values and interpersonal relations.

A teacher may find the suggestions that she alter her teaching methods, classroom management strategies and curriculum content inconvenient and perhaps even difficult. But, if the teacher would begin to contemplate the enormous difficulties and concessions the children

of culturally divergent populations must make, even as they enter the school building, the compromise may be put into clearer perspective. It is a great challenge and a potential threat to each culturally divergent child to enter and remain in an alien school setting.

Every teacher must realize that each culture is equally valid and worthwhile. There are merely cultural differences. Similarly, no dialect or language is superior to another. "Both languages (English and Hopi) have been developed over the ages, largely unconsciously, to meet the experiences and problems of their speakers and we cannot call one higher or more mature than the other" (Chase[10]).

The teacher can greatly enhance the education if she offers subject matter that will be meaningful in the context of the child's world, and if she employs teaching and management strategies that are synchronized with the child's background experience.

Within the Navajo culture there are notable examples of differences between the Navajo and Anglo cultures. For example, Anglos are reinforced for excelling, for being best, for standing out, for being unique. In contrast, Navajos are not supposed to deviate from the norms. It is very important that they do not stand out, appear superior or compete. Consequently, the teacher must avoid singling out a child by publicly bestowing praise upon him.

This does not mean that the teacher can never praise a child or use competition as a means of motivation. It merely means that she must use techniques which do not separate the individual from the group. For example, in private or in writing on a child's paper she may highly

praise him and his work. Similarly, team competition would be appropriate to the classroom because individuals are part of a group and working for a group. For example, a spelling bee using team rather than individual competition would not be at all threatening. The two teams could even stand in front of the classroom as a unit with individuals answering for the team. In addition, the physical proximity of his teammates is reinforcing to the child; he is not alone.

Primary rewards and toys may be used as a means for motivating Navajo children to work, but they must be administered on a group basis. For example, a reward could be administered upon the class' completion of an assignment. Quality criterion standards could include a minimum baseline score that all children must achieve and a higher class mean than previously attained.

Navajo children will not run for office or try out for a lead part in a play. A Navajo child will not take it upon himself to try to stand out. Leaders must be picked by group consensus--not by a formal vote. In order to determine group consensus, the teacher would describe the particular position, what it entails, and then ask who might be a good leader for the position. A child will then suggest a name, other children will suggest more names or concur with the first name. Thus, the teacher will be able to determine the consensus of the group without violating their social norms, by permitting their students to work within their own realms.

The emotional climate of the classroom is determined by the interaction of the teacher and the children being taught. The room forces him into many psychological roles during the school day. Some of the psychological roles are summarized below.

1. As representatives of society, teachers attempt to inculcate in children the values of the community. These include moral attitudes, thinking patterns, and life goals.

2. Teachers act as judges and screeners in their marking systems, report cards, promotion schemes, and the day-to-day work of conducting class sessions and correcting papers.

3. As a source of knowledge, teachers are expected to be living textbooks from which one can get information.

4. Teachers are helpers in the learning process where there is difficulty. They ask leading questions, go over problems step-by-step, and conduct discussions.

5. As a referee, every teacher is expected to be a Solomon. He is judged by his ability to be fair and to help children reconcile their differences.

6. Psychologically, some children may use the teacher as a respected person with whom they identify themselves.

7. The teacher is a temporizer of anxiety. Confidence, competence, and humor can help to reduce anxiety in children. Stern threats, rigid severity, fear of failure, and disapproval can increase anxiety.

8. The teacher will be an ego-supporter for many children when he helps them muster their courage and gives them reassurance.

9. As a group leader, the teacher sets the tone of the class, and helps the group function harmoniously in reaching group goals.

Some of these roles can be more adequately met by teachers of minority group children if they understand the cultural backgrounds of the children in their classes. There may be serious conflicts between values held by parents and a teacher. While a teacher may teach children certain values which their parents do not hold, he should not teach young children that their parents have wrong values. For example, from the teacher's point of view, the Indian's religion may not be rational, scientific, or philosophically sound. Indian mythology, unlike its Christian counterpart, is accepted literally rather than allegorically. The teacher's belief that there is a scientific explanation for all natural phenomena is juxtaposed to the unscientific ritualism of Indian cultures where witches, not germs, bring sickness.

A teacher may find that discipline patterns in a child's home differ from those of his own childhood. Shame and fear are often effective controls within the family. The bogey-man is a reality for the Indian child, but not the hickory stick. Coming from a culture where conformity and anonymity are primary values, children are apt not to seek to be different or individual. Few Indian children may wish to demonstrate that they are the best readers or spellers in the class.

Teachers report that children from Spanish-speaking and Anglo homes watch closely when a dispute involves one Anglo child and one Spanish-speaking child to see if the teacher is completely fair in making a settlement. The teacher is apt to be accepted in relation to the degree of fairness which the group feels he exercises.

The understanding teacher will see many opportunities in school to nurture the ego-needs of children. Specific ways of doing this for Indian children or Spanish-speaking children will not always follow the patterns the teacher himself experienced. The Indian child who never lets his eyes meet his teacher's when responding to him, but hangs his head shyly, must learn that this is a custom unfamiliar to many of his teachers. The way in which attempts are made to change children's behavior will determine to a great extent, the teacher's success. Children who come to school from homes where authoritarian practices are in vogue will need more security in learning to operate in a free classroom atmosphere where children plan with the teacher, where children's suggestions can be important, and where children may even disagree with the teacher in acceptable ways.

The individual in society is first caught in a cultural milieu which circumscribes his behavior, determines, within limits, his level of aspiration, and defines his life goals. Within this framework of a total culture, he assumes certain clearly defined roles within the social group. He has a class-status role, a role in the family unit, a role as a wage earner, a role as a leader in ever widening circles from the immediate environment. Leadership roles may manifest themselves in religious or health practices, recreation, or politics. Within the framework of one's roles in a social group, the individual copes with all his problems and responds to all his opportunities through learned ways of behaving. The individual's total life experience as he has responded mentally, physically, socially, emotionally, morally or spiritually has evolved ways of behaving to gratify his needs, overcome his fears, anxieties, and frustrations, build attitudes toward others and himself, and set his levels of aspirations as an individual.

The child learns his individual responses to fulfill his social roles within a cultural heritage from infancy as he imitates, responds to, and comes to understand his parents, his siblings, the extended family, and later, those outside the family with whom he comes in contact. Thus, he very gradually learns and accepts ways of behavior and maturing within a particular social group, resolving its conflicts and gaining confidence in its agreements.

The teacher, whose total pattern of learned ways of behavior and maturing may be culturally different, has accepted a responsibility for guiding this child's behavior in school so that it will be possible for him to achieve realization of his ultimate potential both in the social group from whence he came and in the larger society into which he unavoidably moves.

CHAPTER VI

CUES

Miller and Dollard[36] define cue as "any specifiable attribute of the environment, which the Gestalt psychologists or other students of perception discover as a consistent basis for discrimination. . . ." They also say that "changes, differences, the direction of differences, the size of differences, patterns, and gradients of size and texture can be thought of as cues."

Any stimulus can serve as a cue. An example of some verbal cues in a classroom might consist of the teacher's directions, commands, or questions intended to elicit the pupil's response. All these cues may potentially evoke responses from the child. Examples of visual cues are the physical arrangements of the classroom, or the facial expressions of the teacher.

A good cue is one that "stands out"--is salient and concrete. The more modalities or senses a cue affects, the easier it is for the child to discriminate. The words used by the teacher act as cues for the pupils. Since the child is not fully acculturated, it is proper to use only the words that the child is able to understand. Cues could be made outstanding by projecting giant-sized images of drawings, small objects, pictures in the books, on the wall. "To help children learn the names of the months, it is sometimes helpful to have them identify the name of the current month with some familiar object or person" (Bloom[5]).

If children are being taught how water boils, and how it evaporates, it is better to demonstrate it to the children, by actually boiling the water. In this way, the cues are made concrete, and learning takes place through different sensory modalities.

Other ways in which the cues could be made outstanding are to let the child experience the new words and concepts by actually seeing them or touching them. Words like soft, smooth, hard, spongy, etc., could be taught by letting the child touch and see things that have these qualities. It is essential that every child participate actively in the learning situation in order to learn.

Learning involves acquiring discriminations which make responses more specific to the appropriate cues. What cues are important for a particular individual and in what way he perceives them, depends largely on his cultural background. Each culture or class tends to minimize the use of certain sensory modalities. A recent unpublished study by Speiss[46] showed that the middle-class children scored the highest on visual and auditory tests, and the scores of middle-class bilingual children were very close to them. The lower-class children tended to exhibit motor preferences in learning.

In an experiment conducted by SWCEL, the Illinois Test of Psycholinguistic Ability was given to the Navajo, Pueblo and rural Spanish American first-graders. It was found that the children from each of these cultures differed significantly from children in each of the other cultures. In visual decoding, the Pueblo performed higher than the rural Spanish, who in turn scored higher than the Navajo. On visual motor sequencing the Pueblo again scored highest, this time followed by the Navajo who were above the Spanish. This means that both the Pueblo and the Navajo children might learn faster, if information is given to them through visual channels.

"The motion picture is the way par excellence of presenting visual cues" says Miller[36]. In situations where vision is an important part of the real-life situation, movies can be used as an important educational medium. Besides its ability to present relative motion, it can also be used to direct attention to important cues in a static subject, such as how to read a thermometer. Since motion pictures are expensive and not practical in classrooms, still pictures could be accompanied with a verbal commentary. It should, however, be kept in mind that when cues from different modalities are used simultaneously (e.g., visual and auditory) these cues might either contribute to or interfere with learning. If the responses produced are the same, or different in proper succession, learning should be enhanced; but if the cues produce conflicting responses, learning is impaired. For example, the commentary with the film should direct attention to relevant cues and elicit relevant responses; but if the commentary distracts the attention from the relevant cues it serves as a hindrance to learning. It should also be pointed out that it is desirable to teach students in situations that are as similar as possible to conditions outside the classroom.

Another problem in learning that is very common among children from different cultures is the "language barrier." A child has a language barrier when knowledge of his own language is greater than that of English. This condition can be found where there is a lack of acculturation. "Language is one of the tools for learning that a bilingual child lacks. He is left only with the cues he can obtain from non-verbal communication. Here too a facial expression may mean different things to different cultures" (Elam[16]). Although the language barrier declines as the child has more and more years of schooling, it still is a major hindrance to learning in the early years of schooling. Such children have already learned the first speech patterns at home with very few secondary contacts with English-speaking people. These children come to school with a small vocabulary of basic words and concepts in their own language, and have to learn the same words and concepts in English. The result is that the bilingual children can speak their mother tongue with a limited vocabulary learned at home. And when it comes to using concepts that they have learned only when in contact with "Anglo" culture, they have no other alternative but to introduce English words into their conversation. The resulting speech is a mixture of two languages, and not exclusively either one or the other. These children therefore cannot be called bilingual but partial speakers of two languages, because they cannot speak either of the languages well. In a study undertaken by Holland[25] 36 Spanish-speaking children from grades 5 through 10 were tested bilingually, with a special Spanish-English adaptation of the Wechsler Intelligence Scale for Children (WISC). The purpose of the study was to analyze language barrier as an educational problem. All but three had some language barrier. For 40 percent of the students English comprehension was a serious handicap. So a bilingual child in the classroom expects and responds to verbal cues that he is used to at home. It would prove worthwhile to give a bilingual child a bilingual education. Teachers who could supplement the language of the classroom with that of the home and neighborhood might achieve much better results than are presently achieved by keeping only English as a medium of classroom instruction.

"Motivations for learning, like cognitive abilities, are only potential rather than inherent or endogenous capacities in human beings; _their actual development is invariably dependent upon adequate environmental stimulation_" (Ausubel[2]). An environment would be stimulating to a child only when he understands it, and only when he is able to comprehend the cues in the new setting. According to Ausubel the best way of motivating an unmotivated child is to ignore his "motivational state" and go on teaching effectively. He will learn despite his lack of motivation, and, from the satisfaction of learning, he will develop a motivation to learn more. The best way a teacher can do that is to generate excitement and enthusiasm about the subject taught, and by allowing the child to identify himself with her. The teacher can also get good results by dramatizing the lives of great scientists, intellectual and cultural heroes.

The suggestions and techniques discussed above are intended to be suggestive rather than complete. Cues, reinforcement and participation is each an important part of every successful learning situation. Understanding and awareness of these important factors can improve learning at all cultural levels, most of all in the case of the culturally deprived.

CHAPTER VII

THE RESPONSE

In Chapter IV, a response was defined as a behavior--what the child is expected to do--it is the teacher's specific behavioral objective. Since the response is a basic component of the learning process, it is important to understand some of its characteristics.

A response may be classified according to the procedures which produce it. In the classical Pavlovian conditioning paradigm, an "unconditioned" stimulus, which invariably elicits an "unconditioned" response, is paired with a "conditioned" stimulus, which, by itself, never elicits that response. After a number of associations, the previously "neutral" conditioned stimulus, when presented alone, will elicit a "conditioned" response. A familiar example of their operation is Pavlov's dog, which was conditioned to salivate to a bell previously paired with the presentation of food.

Since the responses in this procedure are usually "automatic," or "reflexive," (such as salivation or an eyelid closure) the response is largely under the control of the experimenter, who is able to identify precisely the antecedent conditions of the behavior being conditioned.

Learning is said to occur when the probability that the conditioned stimulus will elicit the conditioned response becomes very high.

A second type of procedure is called "operant conditioning." In this paradigm, the rewarding or punishing stimulus is contingent upon an "operant response." Although a cue may be presented, which signals the occasion for a response, nothing happens unless the subject does something first. In this case, the experimenter cannot precisely determine why the response initially occurred. However, if a response, which is emitted at a relatively low rate, is systematically reinforced (a reward is presented immediately after the response occurs), the rate (i.e., probability) of that behavior will increase dramatically. By applying appropriate rewards in certain ways, the procedures of operant conditioning may come to exert a powerful control over behavior.

Most educational behavioral objectives have as their goal the learning of operant responses. As the example in Chapter IV indicated, the specific behavioral objective was to teach the child to answer "two" to the question "How much are one and one?" Even after he has learned the answer he has voluntary control over its verbalization. Initially, the child may not answer correctly very often. But if by reinforcing the correct answer, the probability of its occurrence increases--we can be pretty sure the child knows what the right response is if he answers "two" almost every time.

The above discussion necessitates a further classification of responses into three new categories. Most operant conditioning is concerned with responses which are already in the organism's repertoire. But to teach the simple addition problem in our example, the child must first have learned the concepts of "oneness" and "twoness," he must be able to verbalize the answers, he must understand what the word "and" means, etc.

Learning any response implies that the response be available to the learner. At the first-grade level, many of the behavioral objectives are essentially "new" responses, which have to be "built up" from the child's capabilities to obtain and organize information, and his capacity to modify his verbalizations.

In the first category, then, are those responses which are new to the child's repertoire; the initial problem here is teaching the child to be able to *perform* the behavior. In many cases, the technique of *successive approximations* is used to teach a desired response. One example is teaching a child to write the alphabet. A behavioral objective, for example, could be to teach a child to write an "A" accurately. The first time a child tries to copy an "A" from the blackboard, the behavior is not very accurate. But the teacher would praise him anyway, because the child made an effort, and because the response was an *approximation* of the correct behavior. After a number of tries, the teacher would only give praise if the written character looked *more* and *more* like an "A". (The teacher might help train the response by guiding the child's hand, etc.) The technique here is to gradually reward those behaviors which successively approximate the behavioral objective.

Happily this proced[illegible]l greatly hasten the learning of an initially weak or inaccurate response. Essentially, it entails the "shaping" of behavior. Sidman[41] points out that the general rule in administering reinforcement is to begin with the individual's existing behavior. This can be readily brought about by observing the child's range of behavior and by reinforcing responses closely approximating the desired response. As closer approximations emerge, the instructor may cease reinforcing more distal approximations. Thus, prescriptions of reinforceable behavior become ever more exacting.

Frequently, teachers have difficulty shaping behavior because no attempt is made to reward approximations to the desired pattern of response. Instead, initial reinforcement is contingent upon the pupil emitting only the fully intact response. Most teachers will find the pupil's initial endeavors rather crude, rarely meeting the teacher's standards of performance. Unfortunately, the teacher who is unwilling or does not recognize the importance of shaping may find that an inordinate amount of time will be necessary to modify behavior.

Taber et al.[49] note that "one way to establish a new response is by gradually contracting the permissible margin of error. If the goal, for example, were to teach precise tempo to a student of music, it would be unrealistic to reward the student only on those rare occasions when he briefly maintained a precise tempo. Since the beginning student will be quite variable in his performance of a task, standards should be initially gross." Thus it is quite evident that reinforcing recognizable abortive attempts will be advantageous to both teacher and student.

The second category includes those responses which are available to the child, through past training, experience, and maturity. The child must learn to associate these responses to the appropriate cues, that is, to bring the response under specific stimulus control.

It is relevant to describe the third response category before discussing the second, because the two are intimately related. The last class of responses includes those unproductive, inappropriate, often disruptive classroom behaviors which the teacher desires to eliminate.

Whenever a teacher gives a child a cue--a question, a command, etc.--the approximate response is one of a large number of alternative responses, (see the example in Chapter IV). In many situations, other responses may "compete" with the desired behavior. These other responses may have been established through previous learning experiences, or they may be more or less automatic, internal responses to environmental stimuli (reflexes). The quality and degree of these competing responses determine to a large extent the success and durability of the new learning. The principle of competing responses is a basic concept in many learning theories.

Harlow, for example, holds that the essential process in learning is learning not to emit responses which compete with the desired response, rather than strengthening the desired response. Every individual has a family of alternate responses that share in the tendency to be evoked as reactions in that situation. These alternative habits are usually arranged in some preferential order referred to as "habit-family hierarchy." Harlow, has in fact, demonstrated that where the response is either "right" or "wrong," learning will proceed as rapidly from emitting the wrong response as from emitting the right response. Eventually a child is able to recognize the stimulus or stimulus complex, which as a result of presenting or withholding reinforcement becomes the appropriate occasion for responding.

Guthrie has described learning as a process of preventing competing responses from interfering with the desired behavior. Rewards, in his system, take the subject out of the stimulus situation, and so "protect" the response most closely associated with the reward in time.

In each individual case, the teacher must decide to what degree the child's behavior "competes" with what she is trying to teach him. This is especially important in teaching children from ethnic minorities and from different cultures, who frequently find the classroom environment incomprehensible, and whose patterns of behavior are very different from those expected in the middle-majority school.

For most behavioral objectives, the systematic application of rewards will effectively increase desired behavior. Where incompatible behavior largely interferes with the teaching procedures in the classroom, or with the acquisition of the approximate behavior, additional methods must be employed. To paraphrase Ullmann and Krasner,[50] these methods should be directed toward removing maladaptive behavior and replacing it with more adjustive behavior. In other words, to adequately deal with such problems, the teacher must be able to identify what the child is doing, and also what he should be doing. The principles involved will be discussed more completely in the next chapter on reinforcement, and specific techniques and examples will be illustrated in Chapter XI.

2

CHAPTER VIII

REWARD: THE NATURE OF REINFORCEMENT

1. Acquisition and Reinforcement

The phenomenon of learning may be divided into two phases, called acquisition and extinction. "Acquisition" refers to the increase in the execution of a skill through its repeated reinforcement (such as increased proficiency in mathematics), while "extinction" denotes its disappearance through a process of repeated non-reinforcement. Thus, we have operationally identified two different kinds of learning situations: one which strengthens control over the occurrence of a response through repeated reinforcement, and the other which strengthens control over the non-occurrence of a response through repeated non-reinforcement. Any stimulus or stimulus configuration that increases the probability of a preceding response is technically referred to as a reinforcer.

We have said that "operant acquisition" denotes an increase in the evocation strength of a response as a consequence of reinforcement. Conversely, extinction denotes a diminution in the evocation of a response as a consequence of its non-reinforcement. A response cannot be strengthened by reinforcement unless it is overtly emitted and subsequently rewarded. Thus, in a classroom environment, it is essential to provide materials that evoke responses which will potentially facilitate acquisition of academic skills. It is important to note, however, that all stimuli do not inherently strengthen behavior. In fact, unlearned reinforcers compose a very limited class of stimuli (such as food, water, sleep, or the termination of pain). These unlearned stimuli, technically referred to as "primary reinforcers," appear to have rather limited variations from one culture to the next. Stimuli which must acquire the functional capacity to evoke response, are known as secondary reinforcers and are acquired through contiguous pairing with primary reinforcers. Thus, any stimulus can acquire reinforcing properties through its association with a reinforcing stimulus. Eventually, the neutral stimulus becomes a secondary reward and develops the capacity to evoke the response originally elicited by the primary or unlearned stimulus. This procedure has come to be known as "classical conditioning."

Once a neutral stimulus has undergone this metamorphosis, it can be effectively employed to strengthen behavior. Conversely, a secondary reinforcer can lose its potency through repeated non-pairings with primary rewards. After a secondary reinforcer, e.g., praise, has been conditioned, it can be effectively employed to strengthen alternate responses which were not present during its original establishment. Eventually, these reinforcers can be effectively employed to bring the desired behavior under the control of its natural consequences.

With the introduction of reinforcement, the pupil will generally manifest an increase in the evocation rate of the reinforced response. Once the desirable pattern of responding has been shaped, reinforcers can be readily employed to initiate, strengthen, weaken, extinguish, and maintain the pupil's attending to the instructional process. This is easily illustrated by an increase in the execution of a skill subsequent to interest or approval by the teacher. Thus, from the child's stand point, a reward is an incentive which he can work for and acquire by satisfying certain rules. Traditionally, we refer to these rules as "reinforcement contingencies," that is, requirements which the child must fulfill in order to receive a reward. Naturally, an environmental arrangement which will maximize evocation of specific behaviors is essential to this process.

2. Secondary Reinforcement and Affective Behavior

Almost every teacher can find some attribute in each child to praise. Numerous investigations substantiate the hypothesis that praise is a highly potent incentive in eliciting desirable behavior. Whenever possible, the teacher should attempt to attend to a pupil, praise him or perhaps express interest in whatever he may be doing. Almost invariably, her efforts will be well received and the dividends frequently quite disproportionate to the effort involved. Endeavors of this type are a rich source of extrinsic motivation for the child. All human interactions are controlled and manipulated, and the teacher-pupil interaction is no exception. Giving attention, praise, and awarding good grades are all examples of manipulative devices technically referred to as secondary reinforcers. Through their association with unlearned or primary rewards (e.g., food) they develop reinforcing properties and can be used to control and manipulate behavior. Initially, the direction and structure of classroom behavior is the responsibility of the teacher and the efficacy of her control is largely a function of her skill in dispensing and withholding reinforcement.

Periodically, educators have argued that behavior modification through reinforcement is both unnatural and unnecessary. They contend that motivation is intrinsic, autonomous and inherent in the child. Although some children come to class highly motivated and predisposed to functions at their optimal level, there are numerous children who never display this predisposition and consequently must, if they are to progress, be extrinsically motivated. The unwillingness to accept manipulation and the responsibility of control can frequently thwart the learning potential of the student and result in slovenly, undirected educational practices. Since the classroom climate is largely created by the teacher's choice of influence, she is relatively unhampered in manipulating the learner and the learning situation.

Striving toward fulfillment can take different forms with different children. The child with a history of repeated failure may show strong needs for adequacy and security and will generally be highly responsive to the teacher who reinforces these needs. On the other hand a spoiled child may be totally impermeable to social rewards. Careful analysis of a child's assets, interests, and needs can frequently reap benefits impossible to achieve through mass instructional approaches.

Interpersonal relations among peers is another important source of reinforcement. Hartup and Tifkin[21] reported that peers differentially affected children's behavior which was largely a function of the sociometric status of the reinforcing agent. Paradoxically, "performance on a simple task holds up better when approval is dispensed by a child who is unpopular or disliked than by a child who is popular or liked." A healthy classroom climate is an important factor in maintaining positive attitudes toward peers. Hartup and Tifkin[21] also found that "classroom peer groups with nearly an equal distribution of friendship and influence in contrast to those which were distinctly hierarchial had both more cohesiveness and more positive norms concerning the goals of the school."

A crucial aspect of interpersonal contact among peers is the exercise of some measurement of control over the motivation patterns of its members. Gratification of individual needs are brought under social regulation and controlled by the group. Of course, the freedom to shape the activities of others is initially extended to the teacher; self-direction among the pupils depends upon the degree of restraint the teacher wishes to impose upon student activities. Naturally, the degree of restrictions upon pupil autonomy is determined by the situation.

The emotional climate of the classroom permeates every aspect of the learning situation. This is especially true among the first-grader who is immersed in the process of formulating his attitudes toward achievement, self-control, interpersonal relations, and self-esteem. Almost invariably the teacher's affective behavior sets the guidelines for pupil performance. Her encouragement, praise and attention are important elements in redirecting the pupil's behavior and are optimal conditions for maximizing learning.

Frequently teachers presuppose secondary reinforcers to have equal reinforcing values for different children or for children of different social strata. The frequent use of the word "correct" or other types of verbal praise is a case in point. For example, a number of studies have reported that the term "correct" is more reinforcing for middle- than for lower-class children. Ziegler, Hodgdin, and Stevenson[51] found that while verbal reinforcers primarily connotating "praise" improve performance of lower-class children, they did not affect the performance of middle-class children. Ziegler and Kanzer[52] found that verbal praise such as "good" or "fine" was more effective with the lower- than with middle-class children while the terms "correct" or "right" were more effective with middle- than lower-class children. This performance is undoubtedly related to differential class learning; that is, for the middle-class child, the term "correct" has resulted in a more immediate and better pay-off in terms of primary reinforcements than for the lower-class child.

It is evident from these and other studies that social background determines, to some extent, what rewards are appropriate in the classroom; what is reinforcing to one individual or group may not be reinforcing to another.

There are a number of strategies for identifying potentially reinforcing stimuli. With children from different cultures, initial steps toward acquiring relevant information might involve reading about the history of the people, observing the community, and questioning qualified and experienced people. The teacher might question the child, his parents, other teachers, and--perhaps the most fruitful source--a member of the community respected by his own people. The following pattern of approach might be a useful guide:

> I would like to help educate your children to the best of my ability and to teach in a way that he can learn to the best of his ability. Your information and suggestions can help me to know more about your People, thus enabling me to teach your children more effectively.

It is of profound importance that the teacher approach the ethnic community of her pupils with an attitude of respect and goodwill as one who has much to learn, rather than in the spirit of false superiority and condescension.

3. Examples of Strategies for Determining Relevant Reinforcers

Discovering appropriate reinforcers in various ethnic populations is a complex task. In order to illustrate specific strategies for gaining information about reinforcers and subsequently methods for their employment, reference will be made to examples from the Navajo community. A teacher teaching in the Navajo community can learn much about the Navajo people by reading relevant books and journals. Hopefully, the school will provide orientation, information and cultural sensitivity training, especially for new teachers. Perhaps from a member of the Navajo community, parents, or the children themselves, the teacher might discover that children find soda pop, candy, comic books, and other articles readily available at the trading post rewarding; and that Navajo children also enjoy fairs and field trips, as do most other American children. As a participant-observer in a Navajo home, the teacher might learn that the children love to eat mutton ribs . . . especially if they are permitted to take part in barbecue preparations.

In lieu of home visitation, sensitization could be developed through discussions with a person who has had first-hand experience with the Navajo. (It should be cautioned, however, that Amerindian groups, as found in certain Pueblo communities, may not be receptive to intrusion into their culture by outsiders.) Certainly, Navajo children would be greatly rewarded if the teacher learned and used a few Navajo words. The teacher's use of the Navajo's language will demonstrate to the children the teacher's willingness to really share, respect and accept their culture.

The teacher can also attempt to determine the learning styles of the children whom she is teaching. It is important to know how they learn to learn and how they are taught in their homes. Navajo children, for example, learn more through observation and imitation rather than through verbal modes. Knowing this fact, the teacher might use more non-verbal teaching methods, engaging in activities which can be observed and imitated. Maccoby and Modiano[35], among others, have found that cognitive styles of learning, do indeed, reflect the demands of the culture. Generally, each culture or class tends to maximize the use of certain sensory modalities or components of individual behavioral systems. Thus it would appear to be more effective and rewarding to permit the child to learn through channels which are present in his childhood training. When the culturally divergent child enters school, it is particularly important that he be encouraged and permitted to express himself through the modes employed in his own culture (including bilingual communication). In order to reduce or alleviate their substandard academic performance, it is paramount that we isolate and thoroughly explore the functional relationships between the parameters of reinforcement which may potentially contribute to a more successful education. At this rather crucial stage, endeavors should be made to employ teaching strategies which will mesh with learning styles common to the individual's cultural background.

There are many additional cultural variables with which the teacher must be acquainted, if she is to be an effective, sensitive teacher. An attempt should be made to determine what is potentially intimidating, insulting, or degrading so that these could be avoided. In the Spanish American and Amerindian cultures, praise to a single child may be a form of punishment frequently producing avoidance behavior simply because the child is being singled out and separated from the total group. Navajo children do not like impatient authoritative adults who forcefully demand immediate and total compliance. The children will comply with the teacher's wishes . . . in their own time--and generally will even do a better job than was expected. Each culture has its own temporal schedule for responding to stimuli. The Anglo American culture happens to be one of the most exacting, pressuring cultures. Thus, there is a great need for awareness of these cultural differences and a willingness to modify demands and expectations.

Another strategy for determining relevant reinforcers has been developed by Homme and his associates (e.g., Homme and Tosti[27]), based on Premack's hypothesis: "For any pair of responses, the more probable one will reinforce the less probable one." This hypothesis can be clarified by describing a child's behavior in a classroom. At any given moment, there are a large number of behaviors in which the child might engage, if given the opportunity. He might scream and yell, or go outside and play, or sit at his desk and read a book. Each of these alternative behaviors has a certain probability of occurring. (In common sense terms, the child "prefers" to do certain things. In the most objective sense, we define those things which a child "prefers to do" by how often he does them; we define what things a child "likes" by how enthusiastically he accepts them, and by how hard he will work in order to obtain them.)

Suppose we observe that a particular child, if given the opportunity to do whatever he likes, will often run outside and play, but rarely sit down and do arithmetic problems. Suppose, if the child is given a choice of going outside or doing arithmetic, he will invariably elect to go outside. We may describe "playing outside" as a high-probability behavior; a response which will probably occur very often. And we can see that the alternative response, "doing arithmetic," has a very low probability of occurring. According to the Premack hypothesis, any high-probability behavior can be used to reinforce a low-probability behavior. In other words, if we made going outside contingent upon completing a set of arithmetic problems, the child would probably sit down and do the math. (In common sense terms, the child would do the arithmetic so he could get to go outside and play.)

According to Homme, this technique is successful both for identifying reinforcers and for changing the behavior of individuals and groups. In one study, Homme et al.[27] described the use of high-probability behaviors (running around the room, screaming, pushing chairs, or quietly working jig-saw puzzles) to reinforce low-probability behaviors (sitting and looking at the blackboard). Their method was to alternate signals (cues) for the desired behavior (sitting) with signals for the reinforced behavior.

> For example, sitting quietly in a chair and looking at the blackboard would be intermittently followed by the sound of a bell, with the instructions: 'Run and scream.' The (children) would then leap to their feet and run around the room screaming. At another signal they would stop. At this time they would get another

> signal and an instruction to engage in some other behavior which . . . might be one of high or low probability.
>
> With this kind of procedure, control was virtually perfect after a few days . . . when (the children) were requested to "sit and look at the blackboard" (which in the past had intermittently been interrupted by the signal for some high probability behavior), they were under such good control that an observer, new on the scene, almost certainly would have assumed extensive aversive control was being used (27, p. 544).

4. Parameters of Reinforcement

Rewards may be administered in many ways; they may be given in large or small amounts, immediately following the response or at some delayed interval afterwards, after every response or after only some responses. The reward may also vary in quality; for example, a chocolate bar might be more rewarding to a child than spinach.

All rewards do not have the same reinforcing effects, and the conditions of reward presentation largely determine the progress of learning. In this section, some of the parameters of reinforcement will be discussed.

a. Schedules of reinforcement. A reward may be given after every response; this is a continuous or monotonic reinforcement schedule. Or a reward can be given after only some of the responses; this is called a partial, or intermittent reinforcement schedule. Skinner[42] has argued that teachers should reward their pupils on a partial schedule, since this is most similar to the way rewards are given outside the classroom. This can be easily achieved by emitting positive responses (reinforcements) with decreasing frequency once the desired responses have been firmly established by continuous reinforcement. This procedure has the value of being extraordinarily resistant to extinction; that is, under this schedule, behavior persists during lengthy periods of non-reinforcement (Bugelski[7]). Bugelski notes that it is appropriate to train behavior in this fashion if we are to enable our pupils to adjust to the reality of a frequently non-reinforcing world.

Skinner[42] has described two main classes of intermittent reinforcement schedules. Interval reinforcement denotes rewarding behavior according to a temporal schedule; for example, a child might be given a reward if he sits quietly in his chair for ten minutes. Ratio reinforcement involves presenting rewards after a specified number of responses; for example, a child might be rewarded for successfully completing ten consecutive arithmetic problems.

Since teachers frequently must conform to their own demanding schedules, with little time for the careful, individual observation which ratio schedules require, the interval schedule would appear to be the most feasible method of applying rewards in the classroom.

Studies by Skinner[42] have shown that the application of various schedules of reinforcement typically results in "lawful rates of responding, the rate being proportional to the interval between rewards." In other words, these schedules yield remarkably uniform performances which are highly resistant to extinction.

b. Delay of reinforcement. Several independent lines of evidence have suggested that responses spatially or temporally contiguous with reinforcement are learned more quickly than responses remote from reinforcement (Hull[28]).

Frequently failure to minimize delay of reinforcement has lead to the strengthening of needlessly long, inefficient or interfering chains of "chance" behavior. As previously noted programs demanding immediate reinforcement would generally necessitate individualized instruction, and consequently do not appear readily amenable to a classroom situation. An instructional process necessitating deferred gratification is a rather crucial problem among culturally diverse children. The teacher might readily observe that ". . . the child is so occupied with the concerns of the present that he has little time to think about the future. Survival is his main concern; his satisfaction must be immediate rather than deferred" (Brembeck[6]). Apparently the long-range rewards have very little meaning to the child whose training history has been concerned with the immediate present.

5. Punishment and Reinforcement

Several lines of research have given nearly universal support to the contention that punishment does not usually effect "relatively permanent changes in behavior." We may stop a child from engaging in some "undesirable behavior" (such as fighting) by spanking him, but the effects of this kind of discipline do not last. And in the laboratory, when lower animals are subjected to harsh punishment they often display a variety of "neurotic" and "psychotic" symptoms (including deterioration of normal behavior patterns, loss of bodily functions, and in extreme cases, death from starvation). In other experiments, dysfunction and sometimes calcification of the vital organs were observed in animals which had been exposed to long periods of stress due to punishment. It has long been known that fear, which is a basic consequence of punishment, can cause serious physical and emotional disorders. In other words, if a child's behavior does change as a result of punishment, the new behavior is often more undesirable than the old one; the cure, in this case, is worse than the disease. For example, a teacher who yells at her pupils, who takes away their recess periods, and who constantly ridicules them may become a "secondary aversive stimulus"; the children may quite naturally seek to avoid contact with someone whom they fear--someone who hurts them most of the time.

We may speculate as to why such ineffective and dangerous methods of punishment have been used to control human behavior in so many societies for such a long time. Perhaps the use of punishment originated in man's primitive impulse to strike back when hurt. Or perhaps these techniques were adopted because better methods were not available; because people did not know any better.

We have attempted to show in the last five chapters that learning proceeds in the healthiest and most efficient way when "good things happen"--when rewards, rather than punishments, are administered, contingent on the child's behavior. It is hoped that an understanding of the basic principles of learning will enable teachers to work in a healthy, productive classroom environment, with happy, achieving children.

CHAPTER IX

THREE STUDIES OF REINFORCEMENT: APPLICATION TO CLASSROOM MANAGEMENT SYSTEMS

Introduction

In the last few chapters, a number of "experimental findings" have been presented which support many of the statements we have made about the learning process. In most cases, only the results have been described and not the experimental procedures by which they were obtained. In this chapter, three complete studies are reported as examples of some of the methods which have been used in educational research.

These studies are all concerned with reinforcement variables, and the way rewards may be administered in the classroom, and the results of these experiments have important implications for classroom management systems. A description of the findings alone serves an important and useful purpose. But it is equally important that teachers understand how research is performed in the laboratory and in the classroom situation.

Some teachers have been reluctant to allow experiments to be conducted in their classes; they have been afraid that studying young children in a rigorous, objective manner might hurt them in some way. These fears are not entirely unfounded; irresponsible researchers, conducting ill-conceived, unsupervised studies, may well cause their experimental "subjects" undue stress, anxiety, frustration, etc.

In fact, however, it is very, very rare for children to be abused in any way by well-planned studies conducted by competent, responsible investigators. For one thing, it is not so easy to go into a classroom and "do something." Educational researchers work under a very strict set of legal and ethical rules and regulations. Their proposed experiments are usually reviewed by a great many responsible people (including school superintendents, principals, and the teachers themselves) before the studies are actually carried out. In most cases, the cooperation of the teacher is necessary--and desired.

After all, the aims of the researcher and the teacher are quite similar; both are interested in obtaining information and in developing techniques for teaching children in the healthiest and most efficient way possible. It is likely that some teachers and parents are opposed to classroom research because they do not know how the research is conducted--they are not fully aware of what is actually done when an educational experiment is performed.

It is hoped that the following three reports will show that experiments of this kind are usually very pleasant experiences for both pupil and teacher, and that when the teacher and the researcher combine their talents and ideas, everyone gains from it.

Experiment 1. Learning as a Function of Feedback Condition*

There is abundant evidence that correction enhances performance. It would be premature, however, to assume that the efficacy of correction in its influence upon performance is applicable to all learning situations. Previous studies were conducted under highly controlled, and somewhat artificial conditions. Customarily, the researcher designs his studies in order to control and limit as many possible variables as he reasonably can. In fact, the classical method in science is to hold constant all controllable variables except the one being manipulated. Even in more "practical" field tests involving correction procedures, there has been a considerable amount of control and manipulation of equipment, materials, and procedures. It would be difficult to replicate these findings in the complex milieu of the typical classroom.

For reasons not altogether clear, the effects of those variables manipulated by the researcher (called _independent variables_) seem to lack the strength that variables have under realistic social settings. There may be a grain of optimism in this state of affairs for those of us interested in introducing learning principles as innovations into the classroom. What may be relatively imperceptible differences that can only be recorded by sensitive measurements in the laboratory may become magnified under conditions present in a live classroom situation. This certainly whets our appetites for adventure and discovery as we anticipate trying out new techniques to help our children.

---

*Experiment conducted at SWCEL by Madeleine Speiss and Eleanor Leventhal.

In the field of educational research there have been continuing efforts to improve educational procedures. In this study there was an attempt to discover teaching strategies which might facilitate learning. Correction is an integral part of the instructional process. The methods of correction may greatly influence the degree to which the student learns and integrates new material. Although extensive research has been carried out in the laboratory substantiating the notion that correction procedures enhance learning there is a paucity of documentation of this principle for the real life conditions which prevail in the classroom.

The Southwestern Cooperative Educational Laboratory study carried out in eight Albuquerque classrooms involved the manipulation of three variables: correction versus non-correction, teacher versus student correction, and delay of correction. The objective of this investigation was to make systematic assessment of these three variables following an extensive search of relevant existing literature. In capsulized form we will now consider the rationale and subsequent hypothesis made for each variable.

The term feedback is very much in vogue these days. It has been used quite extensively by computer science and aerospace industry to refer to sophisticated circuitry mechanisms which can provide correctional information in many cybernetic machines and models. The feedback concept has been effectively used as an important element in the development of communications models which are employed across a variety of disciplines ranging from the physical and behavioral sciences through linguistic fields.

However, "feedback" has special meaning to the learning theorist even though the term bears a certain analogous relationship to its employment in other fields.

Therefore, because of the multiplicity of meanings attached to the term "feedback," it is necessary to define the term more specifically. According to Goldbeck and Griggs, feedback may serve several purposes:

1. It may provide information concerning the adequacy of responses made.
2. It may serve as a reinforcement and reward for responses.
3. It may have a motivating effect on performance.
4. It may be used to direct the next step to be taken in a learning program.

One of the most easily applicable reinforcers is simple knowledge of results. The reinforcing value of feedback upon performance has been firmly established on an empirical level (Skinner[43], Carr[9], and Pressey[40]). Thus if a teacher permits her class to receive feedback, long-range performance scores should result in greater gain than among pupils who do not receive feedback. Hull[28] and his associates found that differentiation does indeed proceed faster when correction is permitted. It appears evident that feedback does facilitate learning. Through a process of modification and maintenance, correction evidently functions as a reinforcer, strengthening the behavior that precedes it. Despite these favorable findings there is much to be learned regarding the manner in which correction is administered. For example, Hull[28] has found evidence suggesting that responses that are spatially or temporally near reinforcement are learned more quickly than responses remote from reinforcement. Pressey[40] points out that although

> . . . theories of learning recognize the paramount and obvious importance of the learner's knowing whether each response he makes is correct or not, research has shown that such knowledge is most effective if obtained without delay.
>
> According to Hullian theory delayed reinforcement generally leads to a diminution in response strength through a reduction of incentive motivation and through the reduction of habit strength with changes, i.e., increases, in the delay of reinforcement.

Typically a close temporal relationship between the reinforcer and response will maximize learning. Increased intervals of delay frequently lead to strengthening inefficient interfering chains of chance behavior. Carr[9] contends that "even a slight delay may drastically retard learning."

The statements of prominent educators, the lessons derived from numerous teacher training programs, and the bulk of educational folklore support the hypothesis that student self-correction yields higher achievement than teacher correction.

Jean Piaget has stated that children are not convinced by being told they're wrong but rather they have to act upon the data and transform them and in so doing make their own discoveries.

Further it was stated by Carr[9] that:

> Learning takes place most rapidly if the student is actively engaged with the subject matter. At the outset of training, some time might profitably be spent in watching or listening to someone else perform the acts to be learned, but the student will become proficient only if he practices the acts himself.

In view of these previous findings an investigation of some of the dimensions along which correction procedure may vary was undertaken at

SWCEL. More specifically, an attempt was made to thoroughly examine the nature of spelling performance as a function of three variables: correction versus non-correction, teacher versus student correction, and temporality of feedback. Although these parameters of reinforcement have been shown to produce significant effects in the laboratory, rather scant attention has been extended to their application in the context of academic instructional processes.

SWCEL conducted a study in first-grade classrooms to test whether or not correction could improve children's performances in a learning task (graded vocabulary words) as compared with no correction.

We were just not concerned with comparing correction to no correction; seven different conditions were arranged for the study:

1. In Group A, the teacher did not correct the children's work.
2. In Group B the children corrected their own errors from a correct model. They were given immediate knowledge of how they performed.
3. In Group C the children corrected their own errors after a one day delay.
4. In Group D, the children corrected their own errors after a two day delay.
5. In Group E, the teacher corrected the children's errors, and gave them immediate knowledge of how they performed.
6. In Group F, the teacher corrected the children's errors, but they received the knowledge of their performance after a one day delay.

7. In Group G, the teacher corrected the children's errors, but knowledge of results was based upon two-day-delayed correction.

The evaluation of the seven conditions required a statistical analysis. Data was provided to compare the seven group conditions. All groups were given a pretest to establish baseline information, and all groups were tested at the end of the study (post-test).

Each group was administered three sub-tests, one a week.

The results were instructive:

1. The most obvious finding was that, on the whole, the overall acquisition rates of those in the correction groups were much greater ($P < .01$) than were rates for children in the non-correction group (see Figure 3).

2. The delay of feedback interval was crucial. Even though there was no important difference between immediate as opposed to one-day-delay conditions, there was a significant difference ($P < .05$) between these conditions and two-day-delay condition (see Figure 4).

3. A third major finding was that there was a highly significant difference ($P < .01$) between teacher correction as opposed to pupil self-correction in favor of teacher correction (see Figure 5).

What might we conclude from these findings?

First of all, the results from the feedback correction conditions proved them to have more significant effects on learning than did the results from the non-correction conditions. These findings support the hypothesis that there is some reinforcing quality which can be attributed to feedback correction.

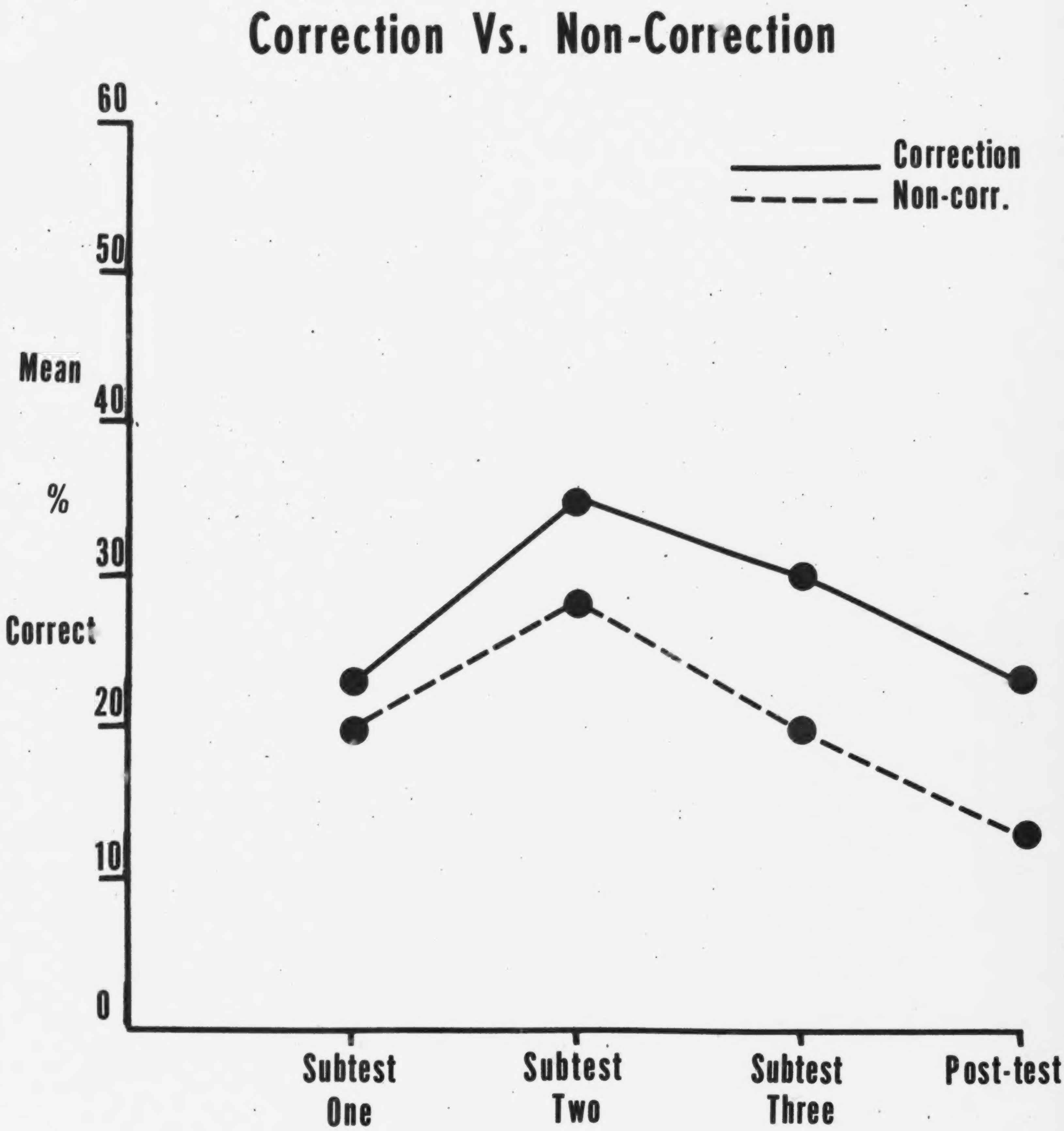


Figure 3

Mean Percent Correct on a Function of Correction Condition

Across 3 Weekly Spelling Tests and a Terminal Spelling Post-test

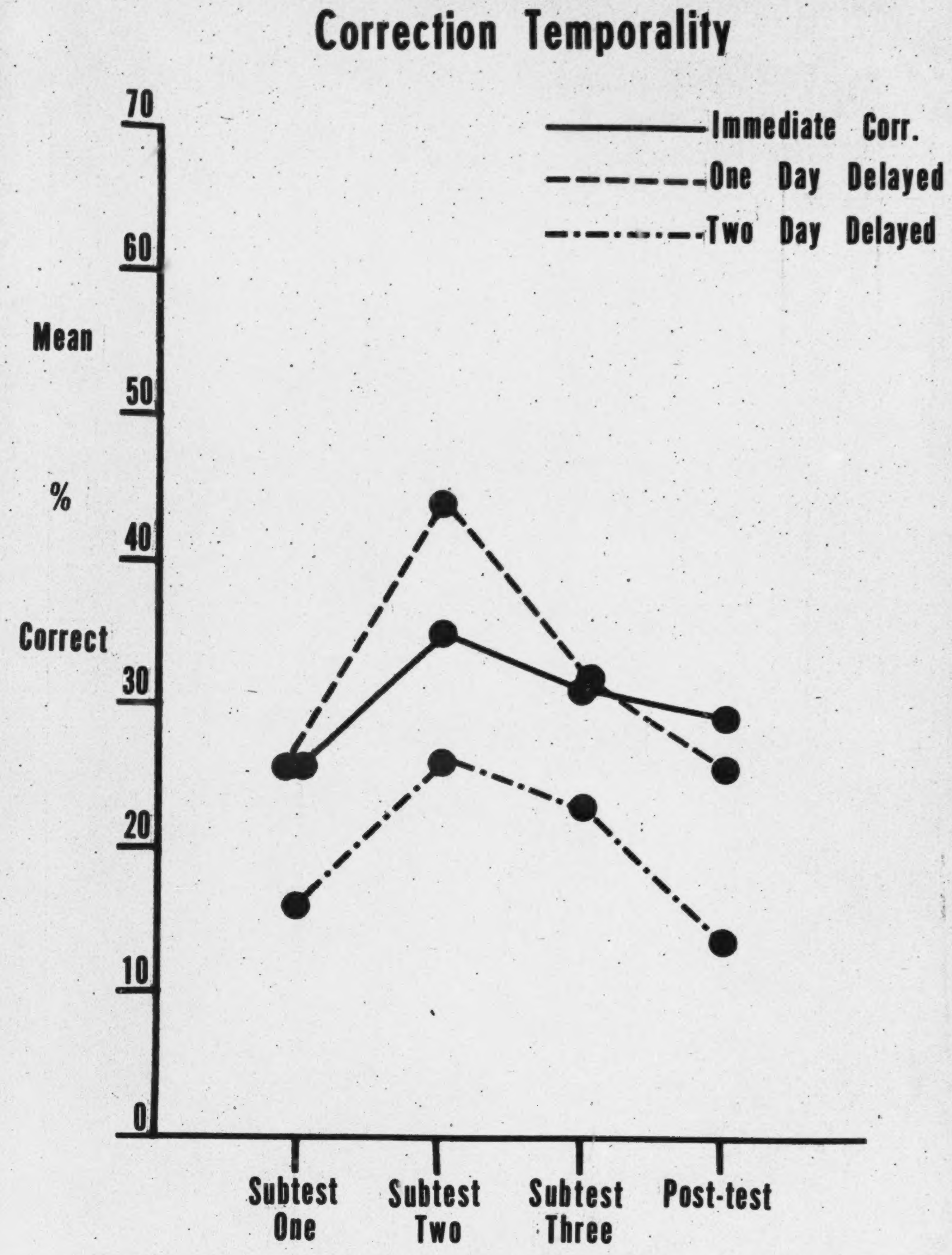


Figure 4

Mean Percent Correct on a Spelling Task as a Function of Correction Temporality Across 3 Weekly Spelling Tests and a Terminal Spelling Post-test

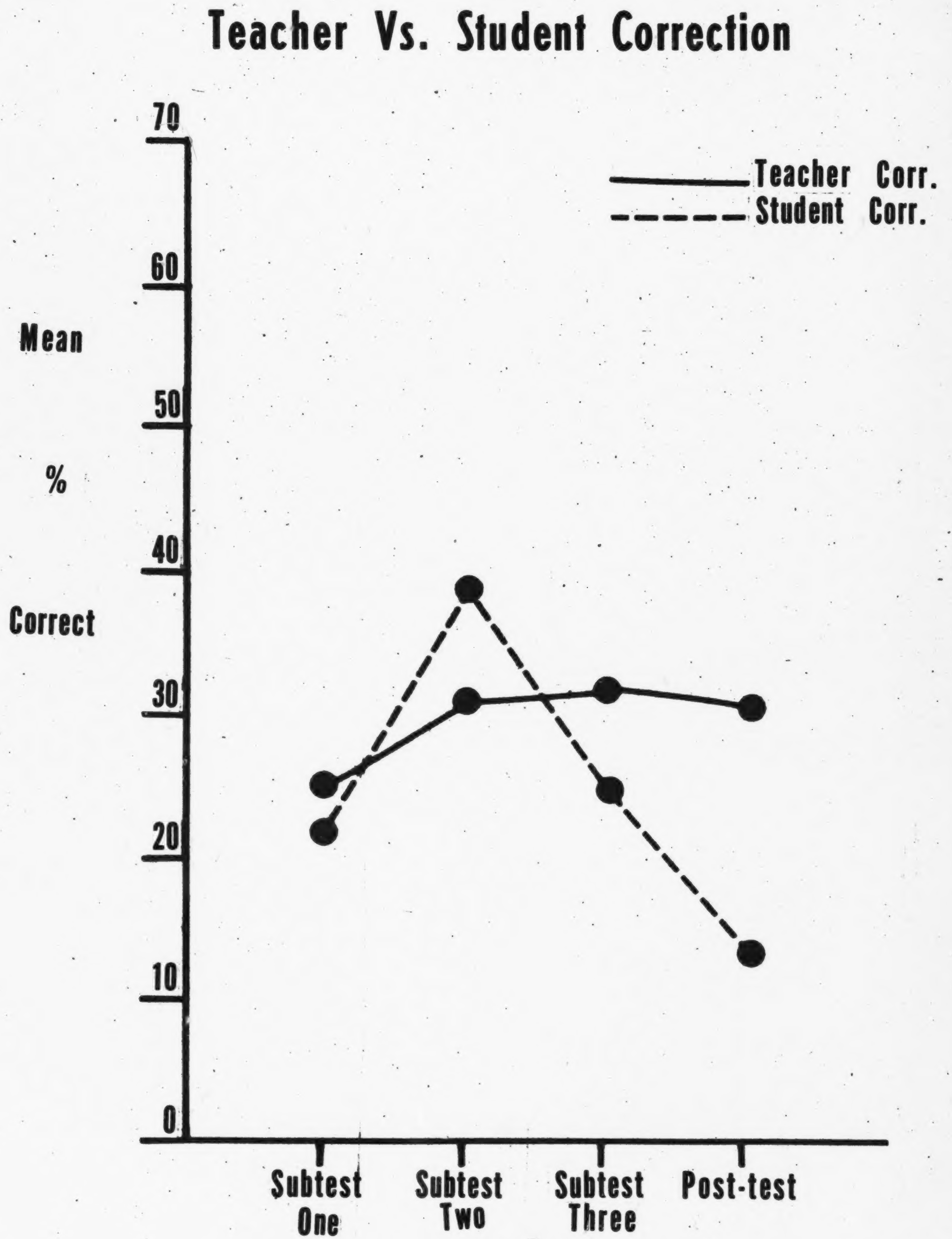


Figure 5

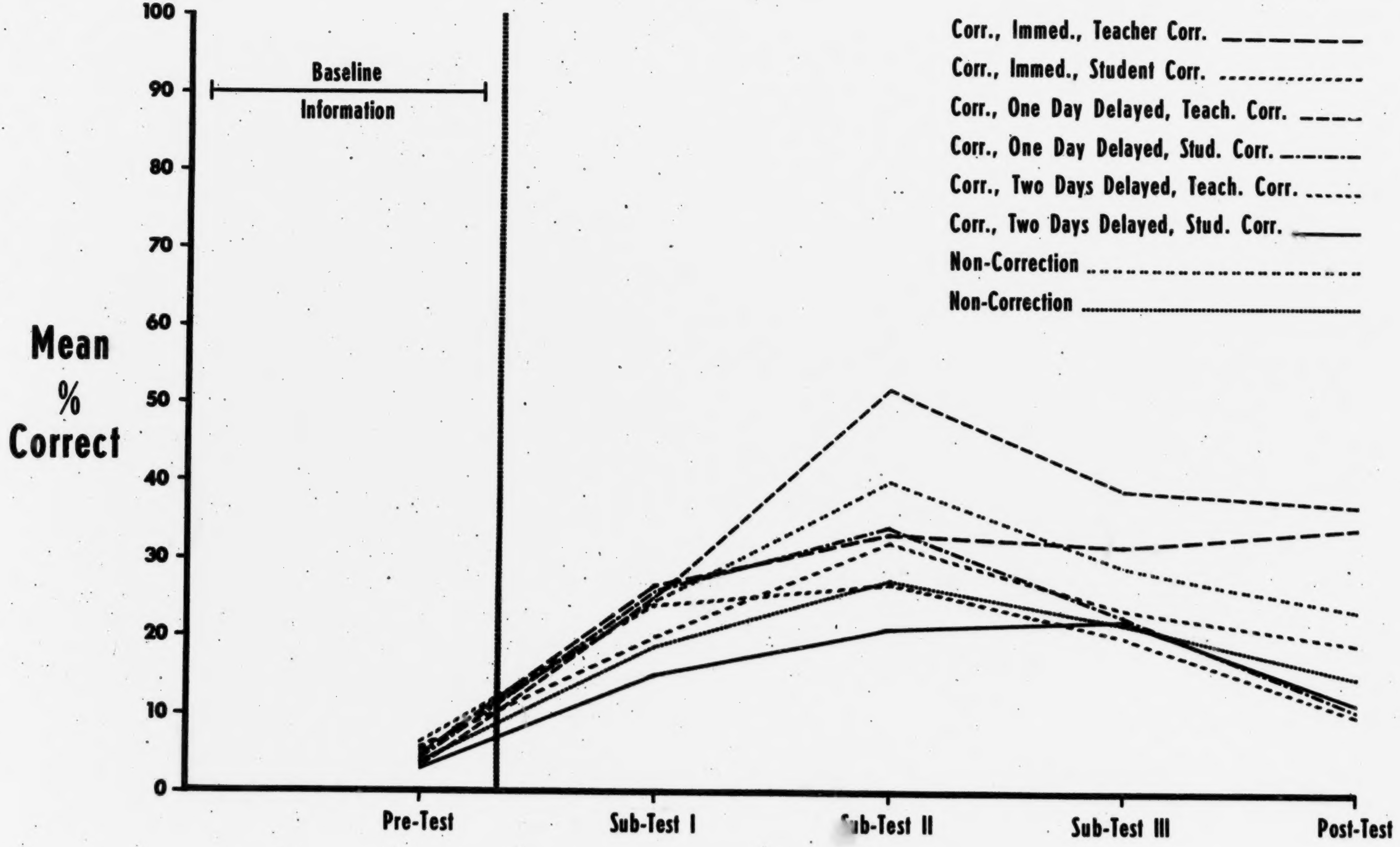
Mean Percent Correct on a Spelling Task as a Function of (Teacher vs. Student) Across 3 Weekly Spelling Tests and a Terminal Spelling Post-test

Why could not an explanation be given that this merely illustrates the fact that repetition enhances learning? One thing to consider is that the non-correction group did show learning gains, and they were given no repetitive experiences at all (see Figure 6).

Our second set of findings indicated a significant difference between conditions. Mean performance scores for children in the two-day-delay of correction conditions were far below those for the other correction conditions. One possible explanation for these results may be that learning is a function of activities occurring prior to, as well as subsequent to, the original learning. Thus, when the pupil is having difficulty remembering spelling words, it can be assumed that what he learned before (technically referred to as "proactive inhibition"), or the learning of materials that intervene between original presentation and correction (i.e., "retroactive inhibition"), interfered with the acquisition of his spelling words.

The magnitude of retroactive inhibition is generally a function of the degree of similarity between original and interpolated materials. Consequently, if there is very little similarity between lessons, there should be very little retroactive inhibition. Unfortunately, most instructional programs cannot intersperse higher with lower level tasks. Rather, material is presented in discrete steps of ascending difficulty. In view of these findings it is reasonable to expect an increase in competing responses as the similarity between interpolated and original material is increased.

LEARNING AS A FUNCTION OF FEEDBACK CONDITION



MEAN PERCENT CORRECT SCORES COMPARING 8 GROUPS ON SPELLING WORDS
FOR PRE- AND POST-TEST S AND 3 SUBTESTS

Figure 6

High performance scores among the one-day delayed correction classes may be attributable to a rather short interval between lesson presentation and subsequent correction. Apparently, some kind of response aftereffects can be retained and present when feedback occurs. If the pupil can revive a problem or question, reinforcement can be thought of as functionally immediate. Classes receiving correction two days subsequent to lesson presentation apparently had greater opportunities to learn interfering chains of behavior, i.e., generally a reinforcing stimulus must be presented very shortly after a response is emitted in order to preclude reinforcement of intervening responses.

A comparison of mean performance scores for teacher versus student correction provides information on the relative efficacy of each procedure. Figure 5 shows that groups receiving teacher correction scored higher on the third subtest and post-test than classes who corrected themselves. Evidently, significant separation between gradients did not occur until the third week.

The third result of the study showed that the acquisition rates of children who were corrected by their teachers were higher than rates for children who corrected themselves.

The experiment was replicated and the same results obtained.

Modern cognitive theorists, such as Jerome Bruner, claim that when a child becomes motorically involved in the process of learning, wherein his own movements contribute to his success, learning is reinforced.

Our evidence tends to be at odds with such a notion. The results indicate that a teacher's help actually was more beneficial to the child than his own efforts, at least in the short run, with the particular stimulus materials used in our study.

At the first-grade level, where a child is required to write words correctly as the criterion of learning, he is actually forced to combine skills for which he has little experience or training at his age level. Perhaps he has too many competing psychomotor skills which interfere with the set necessary to perform to the criterion correctly--namely to put some letters together on a piece of paper in the correct sequence. Only one order is acceptable in such a task, and this might require a relatively simple stimulus field so the child will not become confused.

Prescriptions

NOTE: Extreme caution should be exercised in making generalizations to other age or grade levels. Evidence suggests that early childhood learning is quite different from later (adult) learning. SWCEL has demonstrated that correction-feedback reinforcement has been efficacious for improving performance of first-graders; however, prescriptions applicable to other age groups and learning tasks necessarily have to be preceded by carefully testing groups other than first-grade children.

1. Work done by student should be corrected.
2. Correction feedback should be given to the student as soon as possible, preferably immediately, but no later than the termination of the following day.

3. The teacher herself should correct the work done by the pupils, or else she should highly structure the student self-correction process.

4. Different curriculum content areas should be interspersed, instead of having instruction given in one area over an extended period of time. This procedure tends to minimize the effects of competing responses since entirely different materials do not interfere with recollection of old learning. Interference from new or old learning can be reduced by overlearning original materials.

Teacher Reactions

At the termination of the study "Learning as a Function of Feedback Condition," the teachers were requested to relate their impressions gathered over the 40-day duration of the experiment. Some of the teachers, in addition, kept a daily log including information on student insight, learning techniques, and both positive and negative aspects of the experiment.

Teachers' Comments on Feedback Experiment

Question A. Relate some of the various learning strategies your children may have employed or developed to cope with the spelling material.

Comments. 1. ASSOCIATION--Examples

a. far--"like for,only 'a'"

b. some--"like come"

c. coat--"like cat, except with 'o'"

d. town--"like down"

e. corn--"corn flakes" "like horn"

f. while--"like white" (also, the color word white was posted on the wall)

g. then--"remember ten and put an 'h'"
"remember the and put an 'n'"
"remember hen and put a 't'"

2. CLASSIFICATION--Final silent e--those words were easy once they were classified (dime, joke, came, etc.). Two vowels--(rain, coat).

3. Likeness and Differences perceived readily and remembered.

4. "ING" ending made words like morning easy.

5. They* learned to look carefully at each word.

a. Noticed length

b. Noticed similarities to other words

6. They became more aware of beginning and ending sounds.

7. They became more aware of letters.

a. They learned letter names.

b. They discovered that the same old letters arranged in different ways made different words.

---

*They--only about 25 percent of the class employed these strategies to any extent. Some were just beginning to employ them at the end--some never understood any of the spelling experiences.

Question B. Side Effects of Experimentation

1. Saying over and over as they wrote words.

2. Sounding the letters.

3. Looking for little words in the spelling.

4. Looking for words on charts, etc.

5. Say a rhyme word and substitute beginning and ending sounds.

6. Faster children would write words for final test before teacher dictated the words.

7. Looking over at other children's papers.

8. Writing on desks and other papers and other types of media.

9. Peeking at words on practice sheets.

Question C. Relate ways in which children related "learning how to learn" in spelling to other areas of the curriculum such as reading.

Comments. 1. Rules--Final e two vowels--phonics, in general.

2. Carried over days later when I introduced a new word in reading--"Oh, yeah, we already had that in spelling."

3. Also, developed a skill in some children who at first panicked because they did not usually learn that quickly to overcome that fear--words on remembering first one, then two, then all three words. I think this is going to help some of them all through school not to freeze for pop tests, oral questions, etc. Note: If not handled correctly, just an opposite reaction could have taken place, and, I believe, hurt the child tremendously.

4. Just a general skill of looking closely at the structural analysis of a word, developing any ability to help each individual child remember in his own way. All these things interrelate all day long. It just didn't stop at the end of the spelling lesson.

5. All the children, even the slowest, became more adept at learning new vocabulary words--they were more aware of word structure--they actually learned to look at a whole word--to see that it was like or different from other words.

6. Even though phonics wasn't stressed in the spelling, sounds of letters were important to those trying to succeed. They became more aware of these and learned about silent letters incidentally.

7. Realization to do more thinking by themselves. Stimulating.

__Question D__. Relate any positive reactions of the children to the spelling that you might recall such as decorating papers with TV screens, comments, etc.

__Comments__. 1. My class looked forward to the spelling each day. On days when it was scheduled after lunch they would keep reminding me that we hadn't had the TV yet.

2. We got unsolicited drawings of the TV with a word on the TV. These were turned into the lab.

3. More positive attitude toward spelling--__Interesting__: following lesson with words (a) wants, (b) jet, (c) going, Chris said, "Can we have this test again?"

4. In general they just seemed pleased with their acquisition of new knowledge and new application or reapplication of learning techniques every day.

5. Most of the children liked the spelling TV--they never drew it but asked often when we were going to have it. They rarely mentioned it after the experiment was finished.

6. The children liked turning on the TV and warming it up, liked to say the word and try to spell it, liked to compare test results, and liked to predict their results before teacher correction.

__Question E__. What is your reaction to the feedback experiment? Did structuring your teaching have any positive effects for either you or your children? Did you gain any insights into the way your particular class employs learning strategies?

__Comments__. 1. I didn't mind the experiment. For just 40 days the structured lessons were OK. As far as I am concerned, however, with some children the "learning how to learn" was developed much sooner and therefore a falling down took place, i.e., not a great challenge any longer, therefore not much concentration and a greater number of errors.

2. My class did say they thought they would do better on the pupil corrected. Did they? Also, I would like to try this at various times of the year under the various correction procedures before giving a final evaluation.

3. If you listen to kids, you can't help but gain insights!!

4. I plan to use a greatly modified version of Spelling TV at different group levels next year. Also, I will use teacher correction as it seemed to work well.

5. Routine was well set in children's minds, and they didn't realize they were going through some steps.

6. Some slower children would do steps over, e.g., skywriting.

7. Observing changes in letter styles on TV screen and word-sheet.

8. Children felt more secure.

9. Teacher had time to observe the children because of the same teaching structure.

Experiment 2. Effects of Varying Quality, Amount, and Delay of Reward in the Classroom Situation*

> The most optimal instructional materials are nonfunctional in the absence of the child's willingness and interest in learning. Thus, within the context of any system which is primarily concerned with increasing the occurrence of learning, major consideration must also be given to initiating, increasing, and maintaining the child's attending to the instructional process. Commonly, this area has been termed the motivation to learn. Even a cursory review of the literature, or listening to any group of people discuss children and learning, will reveal that getting and maintaining the motivation of the learner is no small problem. However, recent progress made in several dimensions of the broad domain of psychology and education has suggested that this problem may be attached empirically in the lifelike classroom situation. (James C.Moore,1967)

Volume II described the development of a first-year school curriculum designed to incorporate procedures for experimental investigation of classroom management variables. Eight first-grade teachers, representing four schools, were recruited to participate in a two-month summer curriculum development program. At the termination of the curriculum development phase, the teachers had produced the following:

1. An overall set of common instructional materials to be used over the entire school year.
2. A set of detailed lesson plans, behavioral objectives, and mastery tasks for the first 80 days of instruction (subsequent extension for additional days to cover the entire year were produced by the teachers during the school year).
3. Common materials for bulletin boards and other visual aids.

While this component of the teachers' activities had merit on its own, the primary purpose for generating these common sets of materials and approaches was to establish the conditions to experimentally vary selected teacher behavior, reinforcement applications, classroom management procedures, and other relevant variables, in order to investigate their effects on student behavior.

---

*Experiment conducted at SWCEL by James C. Moore, Katherine Bemis and Glenn Schroeder.

Purpose and Expected Outcomes

The purposes of these activities were to study and develop, programatically, classroom management techniques and their accompanying procedures, with the objectives of increasing the children's interest in taking part in the learning process and increasing student gain in behaviors deemed desirable.

Specifically, research interest is directed toward integrating prescribed teacher behaviors into the curriculum. Traditionally, the teacher has implemented her sets of instructional materials by relying primarily on teacher training and experience. However, one may observe, both in textbooks and in the classroom, that the teacher has been given very little assistance in systematically applying learning principles to the on-going classroom situation, or in relating her behavior to specific techniques and procedures for increasing student motivation.

The expected outcomes of this program were:

1. The development of a set of prescribed teacher behaviors and procedures which could be integrated with the curriculum and implemented to initiate and maintain the children's interest and participation in the instructional process.
2. The development of an in-service teacher training program for orienting teachers in the application of the procedures.
3. The identification of procedures for increasing student motivation that are most relevant for unique cultural-socio-economic groups (i.e., Spanish American and Indian).

4. Greatly increased sources of data generated from research in the "lifelike" situation of the classroom.

5. Findings generalizable to other populations.

Description of the First Study

Specifically, the following was accomplished:

1. The Albuquerque Public School District was selected as having the appropriate kinds of schools and students relevant to meet participation characteristics.

2. Four schools from within the district volunteered for this undertaking. They met the following criteria:

   a. English as a second language did not appear to be a major variable (i.e., most incoming first-grade students spoke English).

   b. Incoming first-grade students had not had Head Start experience.

   c. The schools were classified as meeting several characteristics for Head Start programs but were not quite eligible.

The rationale for the above three criteria was based on the desire to work with a population which could be classified as nearly "deprived" as possible, yet not influenced by such things as preschool programs. This rationale was based on two major considerations: (1) The nature of the independent variables being studied. SWCEL was primarily interested in investigating the management of classroom materials, procedures, and teacher behaviors which could be implemented to facilitate the occurrence of classroom learning. To have attempted the task initially with the added variable of predominantly non-English-speaking classroom would have confounded our studies by introducing English as a second language problem. (2) Whereas SWCEL is vitally interested in attacking the English as a second language problem, this specific research effort was concerned initially with the identification and effects of procedures and teacher behavior under the control of the formal school setting.

The first study, initiated in September, 1967, and completed in January, 1968, dealt with the application of incentive and reinforcement procedures to be used with the curriculum, and is directly related to the subsequent studies conducted in the Spring of 1968, described in this volume. It should be emphasized that the curriculum, although under continual revision, served as the basis upon which the effects of various teaching strategies and classroom management techniques could be determined.

Although reinforcement is of recognized importance in its influence upon behavior, the systematic application of reinforcement for desired behavior is seldom observed in most classrooms. Parameters of reinforcement have been varied, using many types of organisms, and have yielded essentially equivalent results. These experiments, for the most part, have been conducted in highly controlled situations, and their extension to the classroom environment should only follow a demonstration of their applicability to lifelike situations. The purpose of this study was to systematically vary several parameters of reinforcement in classroom situations to determine their effects on the attainment of specified curriculum objectives. Specifically, the parameters of interest were quality of reward and delay of reward.

These variables were investigated in actual classroom situations under essentially normal conditions. Additionally, the rewards were those available to all teachers without additional costs.

Typically, a major source of reinforcement in the classroom is the verbal praise of the teacher. This reinforcement is momentary and may not serve as an effective incentive for either relatively short-term or longer term goals. It was hypothesized that keeping a systematic record of classroom performance by means of a point system, where correct behaviors of individual children in the class are rewarded by points accumulated for the class as a whole, would serve to better motivate the performance of desired behaviors. Thus, in this study the conventional mode of verbally reinforcing appropriate behaviors was compared with a point system where the class as a whole accumulated points toward some maximum score which resulted in a tangible reward.

The question can be asked whether children will work better for a delayed goal than for a more immediate goal. Research indicates that immediate reward is more effective in establishing desired behavior. It was hypothesized, however, that children might work as well for a delayed goal as for a more immediate goal. It was also believed that children might work as well for a delayed goal if its attainment is rewarded at such a magnitude as to overcome the effects of delay. Delay in rewards and magnitude of reinforcement were also investigated in the present study in an attempt to determine their effects on classroom behavior, both affective and cognitive.

Method and design. Two types of reinforcing conditions were compared: the conventional verbal praise of the teacher and a point system where accumulation of a specified number of points results in a tangible reward. Additionally, under the point system, two incentive goal conditions were studied; a short-term goal condition where reward occurs approximately every week and a long-term goal condition where reward occurs only after six weeks. Each of these three reward conditions were experienced by each class; however, the order in which they were experienced differed between classes.

The eight first-grade teachers participating in the summer curriculum development program acted as experimenters, and their respective classes provided subjects for the study. The investigation was conducted over three consecutive six-week periods during which each of three teachers was assigned at random to each of the experimental conditions and two teachers were assigned to the control condition (verbal praise).

Nature of the reinforcing conditions. Two basic types of reinforcing conditions were compared: the conventionally used verbal praise of the teacher and a point system.

Under the point system, children were rewarded with points for desired behaviors. These points were cumulated for the class as a whole and the class was instructed that reward would be contingent upon their accumulating a specified number of points. The number of points resulting in reward was always 100. The class' progress toward this objective was indicated by a large pressed board giraffe prominently displayed in the classroom. A scale ranging from 0 to 100 was painted on the giraffe's body. A small toy monkey was manipulated by the teacher to show them its progress up the giraffe's back. At the beginning of each reward condition, the monkey perched at the lowermost part of the giraffe's neck (at 0). At the end of each reward condition, the monkey had progressed to the top of the giraffe's head, or to 100 on the scale. Figures 7 and 8 demonstrate the schedules for administering rewards.

At intervals of either every three days or daily, depending on the incentive goal conditions, the teacher announced the number of points which the class had earned during that interval; and the monkey was appropriately moved up the giraffe's neck. Assignment of points was based on the teacher's subjective estimate to the extent to which behavioral objectives had been reached.

Incentive goals. Teachers who had classes working for short-term goals accumulated 100 points on the average of once each week; whereas teachers rewarding classes under the long-range condition assigned points such that reward would occur only after six weeks of school. Under the long-range goal condition, on the average of twice a week, the class was instructed that reward was contingent upon their accumulating 100 points. Additionally, every three days the teacher announced the number of points earned by the class and mentioned the reward they would receive upon realizing the 100 point goal. Under the short-range goal condition, the class was reminded of the contingencies of reward and apprised of the number of points they had earned daily.

The classes were reminded of their goal, the contingencies of reward, and the number of points earned in such a way as to cause minimal disruption of classroom activities. These procedures occurred at such times during the day as when the class was normally changing from one activity to another, or at similar times, left to the discretion of the individual teachers, causing minimal interference with classroom proceedings.

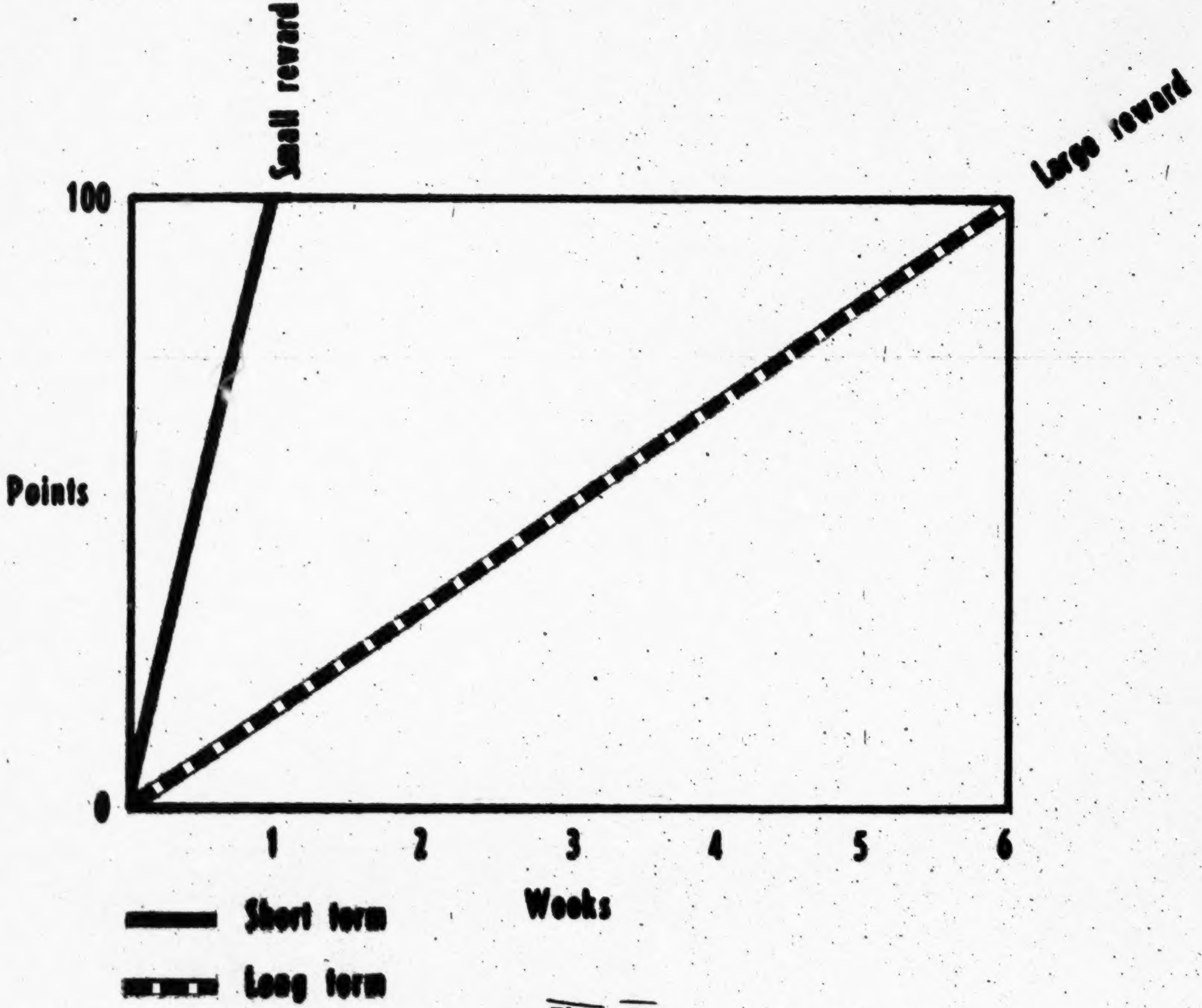


Fig. 7

Paradigm for Long and Short Term Rewards

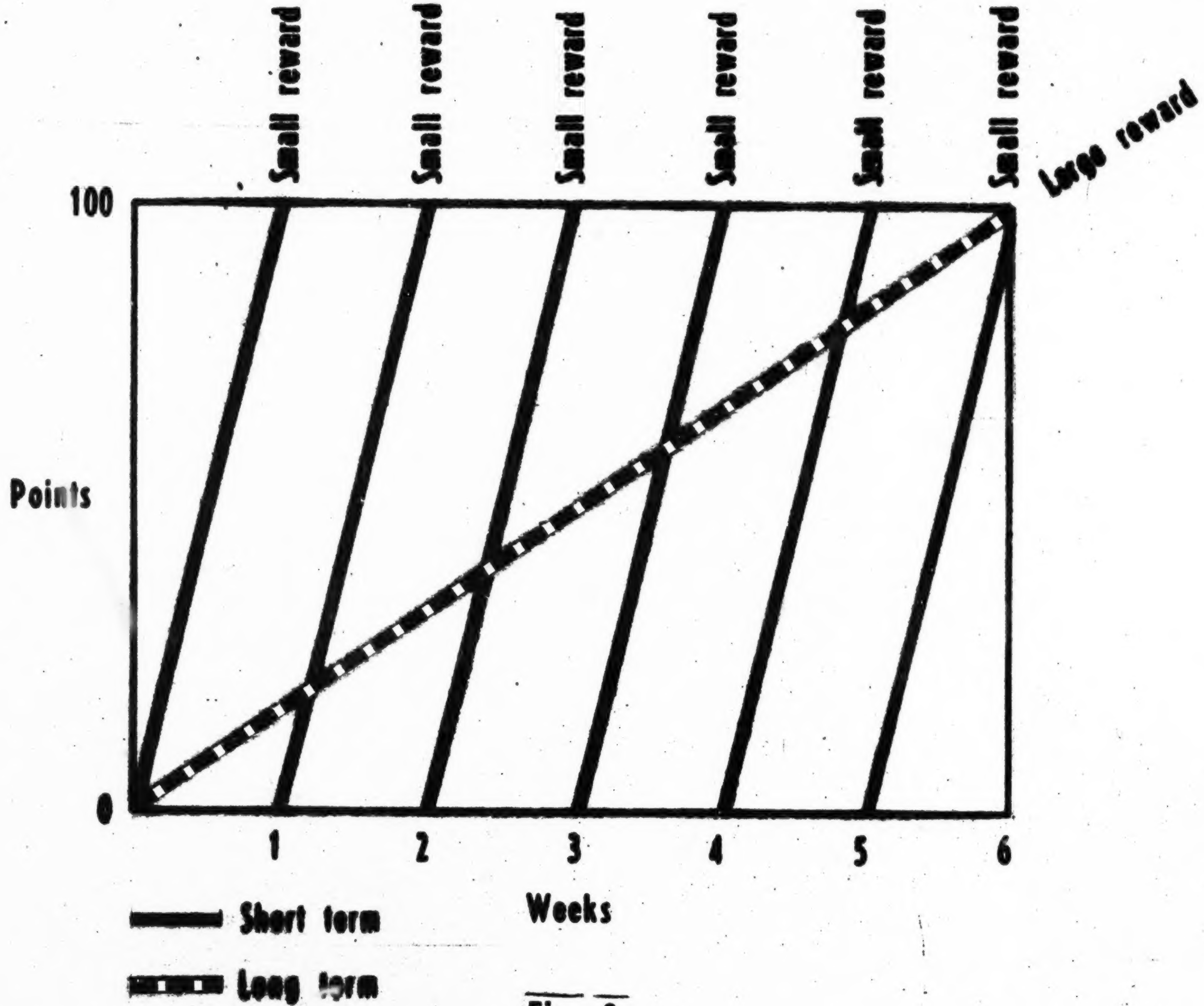


Fig. 8

Paradigm for Long and Short Term Rewards

Teachers assigned points on the basis of their subjective estimates of the relative degree to which behavioral objectives had been reached. Specific definitions of each of these objectives had been worked out by all of the teachers as a group.

Learning situations, reinforcements, and behavioral objectives. The classroom learning tasks were inherent in the material organized by the teachers during the summer curriculum development program. Since the teachers were using a common curriculum with common objectives, points were assigned to specific objectives in order to establish the value of attaining certain behaviors. Specifically, these behaviors in their order of importance were: attentive listening to the teacher, developing skills in reading, developing skills in mathematics, independent behaviors, general participating in classroom activities, and displays of individual and group responsibility.

The reinforcements implemented as incentives for attaining these objectives were of the variety available to almost any classroom teacher. As part of the summer curriculum development program, the teachers had generated a list of rewards that children appear to value, and which were available to the teacher for classroom use.

Under the long-term reward condition, the first reward given during the seventh week of school consisted of a visit to the teacher's home for lunch. The second long-term reward, occurring approximately six weeks later, involved a field trip to Kirtland Air Force Base. A third long-range reward was given near the end of January when the class viewed a full-length feature film.

Under the short-term reward condition, the first reward was ice cream served to the class. The second reward involved a period devoted to finger painting, bubble blowing or an extended recess. For the third reward the class had breakfast together at school. Additional rewards occurring at weekly intervals were selected from a pool of such rewards as having popcorn, chewing bubble gum in the room, a free play period, rhythm band, extended recess, or a walk to the park to play.

Evaluation. Several methods of evaluation were employed to assess cognitive and affective behaviors. Since the curriculum objectives were essentially generated out of commercial materials, standardized achievement tests were applicable. The California Achievement Test, Form W, was administered to the eight experimental classrooms and ten classrooms used as controls which were contained in these same four schools.

The Goodenough Draw-A-Man Intelligence Test was administered to all eighteen classrooms (eight experimental and ten control) on the third day of school. The Lorge-Thorndike Intelligence Test, Form A, was administered to these same classrooms during the third and fourth weeks of school by a certified teacher, not presently teaching, who was trained in the administration of the test.

These three tests were administered in order to assess cognitive growth. Another aspect of the study which involved the affective domain was assessed by means of the SWCEL Student Questionnaire and the SWCEL Classroom Observation Schedule.

Teachers were interviewed to assess their reactions toward the particular methods they employed. Appropriate statistical analyses were employed to determine effects.

Some Major Findings

It is not possible to describe in detail the wealth of information which this study generated. At this writing statistical analyses continue to be conducted on the above assessments. However, an attempt will be made to summarize some of the findings and their implications for the cognitive and affective growth of the students involved. The teachers were generous in providing first-hand information as to the effects the experimentation had on their students' progress. Some of these observations are included at the end of this report.

Cognitive assessment. It was not the purpose of this experiment to show that either the short or long contingency rewards would result in significant cognitive gain. It was hoped that some clues would be forthcoming as to the nature of these two reward systems which would cast some light on possible future investigations which might lead to an increased knowledge about the learner in a classroom situation.

As has been mentioned, two intelligence tests and an achievement test were administered to the eight experimental and ten control classrooms involved in this study. The ten control classrooms were involved only to the extent that the pupils in these classes participated by taking the standardized tests. In every other way, their classroom schedules remained unchanged. Of course, the more observant students were aware that something different was going on in their neighboring classrooms (experimental classrooms). Unfortunately, it is not possible at this time to judge the effects their sophistication may have produced in the control classes.

As shown in Tables 4 and 5, there were significant differences between the experimental and control groups as measured by the Goodenough Draw-A-Man test. No significant differences were found between these groups as measured by the Lorge-Thorndike Intelligence Test.

To adjust or equalize for differences which might have existed between the experimental and control classrooms both of these tests were covaried with the California Achievement Test, Form W.

Significant gains were indicated for the eight experimental classrooms in the area of Arithmetic Fundamentals. One might account for these differences by the fact that the eight experimental classrooms used different curricular materials in the arithmetic area than did the control classrooms. This has been discussed to some extent in Volume II.

In all other areas of the curriculum, no significant differences were indicated between the experimental and control classrooms. It is possible for us to state that the unique situations which prevailed in the experimental classrooms contributed to significant pupil gain in Arithmetic Fundamentals and did not hinder cognitive growth in any of the academic areas assessed by the California Achievement Test.

Tables 6 and 7 indicate an important aspect of the two intelligence tests utilized in this study. This information is of particular interest to SWCEL, because of our emphasis on providing more information about the culturally divergent child and the extensive use we have made of the Draw-A-Man test. Table 6 indicates that there were no significant differences between Anglo and Spanish children on the Goodenough Draw-A-Man test. Conversely, Table 4 shows that there were significant differences ($P < .01$) between these two cultural groups on the Lorge-Thorndike Intelligence Test.

TABLE 4

ANALYSIS OF VARIANCE BETWEEN EXPERIMENTAL AND CONTROL GROUPS' SCORES ON THE GOODENOUGH DRAW-A-MAN INTELLIGENCE TEST

Analysis of Variance

Source	df	SS	MS	F
Treatments	1	1,521	1,521.0	6.75 **
Within	333	75,020	225.3	
Total	334	76,541		

** $P \leq .01$ Significant at the .01 level

General Statistics

	Mean	Standard Deviation
Experimental	101.34	15.27
Control	97.07	14.77

TABLE 5

ANALYSIS OF VARIANCE BETWEEN EXPERIMENTAL AND CONTROL GROUPS' SCORES ON THE LORGE-THORNDIKE INTELLIGENCE TEST

Analysis of Variance

Source	df	SS	MS	F
Treatments	1	315	315.0	2.25
Within	333	46,560	139.8	
Total	334	46,875		

$P \geq .05$ Not significant at the .05 level

General Statistics

	Mean	Standard Deviation
Experimental	95.62	11.47
Control	93.68	12.13

TABLE 6

ANALYSIS OF VARIANCE BETWEEN ANGLO AND SPANISH FIRST GRADE PUPILS' SCORES ON THE *GOODENOUGH DRAW-A-MAN* INTELLIGENCE TEST

Analysis of Variance

Source	df	SS	MS	F
Treatments	1	538	538.0	2.36
Within	333	76,000	228.2	
Total	334	76,538		

$P \geq .05$ Not significant at the .05 level

General Statistics

	Mean	Standard Deviation
Anglo	100.74	15.20
Spanish	98.11	15.05

TABLE 7

ANALYSIS OF VARIANCE BETWEEN ANGLO AND SPANISH FIRST GRADE PUPILS' SCORES ON THE LORGE-THORNDIKE INTELLIGENCE TEST

Analysis of Variance

Source	df	SS	MS	F
Treatments	1	1,497	1,497.0	10.99 **
Within	333	45,380	136.3	
Total	334	46,877		

** P $\leq$ .01 Significant at the .01 level

General Statistics

	Mean	Standard Deviation
Experimental	97.37	11.38
Control	92.98	11.84

It is of importance to note that both of these intelligence tests correlated significantly with 16 of the 20 *California Achievement* Subtests.

Affective assessment. Two instruments were utilized to observe pupil affect. The first of these was the SWCEL *Student Questionnaire*. Trained interviewers interviewed random samplings of children from both experimental and control classrooms during each of the six-week phases of this experiment. The rationale here was that vital information might be obtained from the students to assess their reactions to the rewards. Their answers were statistically compared to the answers of the students in the control classrooms. Again, it is not feasible to enumerate here the many significant differences which were revealed between experimental and control students' responses to their interviewers. However, there were important differences between the experimental and control classrooms in the area of self-esteem. The pupils in the experimental classrooms gave responses which indicated that their self-esteem was significantly greater (at the .01 level) than that of the control pupils. A summary of this analysis appears as Table 8.

This might be attributed to the effect of the experimentation in the classrooms. Possibly, it was a result of what is sometimes called "the Hawthorne Effect." That is, these students were reacting to the impact of all the elements in the experimental situation.

In any event, whether or not these pupils were reacting to the fact that they were members of experimental classrooms, the significantly greater self-esteem scores indicate that the experimental classrooms *did profit in the affective* or *emotional area*.

TABLE 8

ANALYSIS OF VARIANCE BETWEEN EXPERIMENTAL AND CONTROL PUPILS' SCORES ON SELF-ESTEEM RESPONSES TO THE SWCEL STUDENT QUESTIONNAIRE

Analysis of Variance

Source	df	SS	MS	F
Treatments	1	40.5	40.45	8.18 **
Within	216	1,068.0	4.94	
Total	217	1,108.5		

** $P \leq .01$ Significant at the .01 level

General Statistics

	Mean	Standard Deviation
Experimental	6.75	2.13
Control	5.82	2.41

Teacher assessment of effectiveness of rewards. At the close of the present study, a questionnaire was answered by the teacher experimenters. They were asked to give their opinions concerning the effects of the rewards on pupil behavior. They were also asked to comment on their own reactions to the experimentation. Seven of the eight teachers who participated in the study responded to a questionnaire. Table 9 shows the teacher responses to some of the questions.

The teachers were also asked to rank the rewards they believed to be most effective in helping them achieve their goals for their pupils. The following list indicates the way the teachers ranked the rewards.

Short Term

1. Ice cream
2. Breakfast at school
3. Finger painting
4. Extended recess
5. Popcorn
6. Rhythm band
7. Bubble blowing
8. Brush painting
9. Short field trip; e.g., walk around the park
10. Free play period

Long Term

1. Trip to the teacher's home for lunch
2. Trip to Kirtland Air Force Base
3. Viewing a full-length film at school

TABLE 9

RESPONSES TO TEACHER QUESTIONNAIRE OF JANUARY, 1968 (N=7) ON EFFICACY OF REWARDS

The experimenter teachers responded to the questionnaire as follows:

	RESPONSE		
	Long term	Short term	Both the same
1. Which reinforcement schedule seemed more effective in terms of the academic growth for the children?	4	1	2
2. Which seemed more effective in terms of emotional growth?	2		5
3. Which did the children seem to like best?	1	5	1
4. Which did you like best?	3	3	1

In answer to the question, "Which school activities, perhaps some you yourself may not have used, would you suggest be used as possible rewards?", the teachers listed the following:

1. Putting on a play for parents
2. Playing a game outside (other than recess)
3. Writing and drawing on the blackboard
4. Taking a trip to the zoo
5. Singing and dramatizing stories in the classroom
6. Eating lunch in the classroom
7. Viewing movies
8. Observing objects through a magnifying glass or prism
9. Looking at pictures in a viewmaster
10. Looking through binoculars
11. Performing with rhythm instruments
12. Making bean bags and stuffed animals
13. Conscructing toy instruments from cartons
14. Assembling simple model airplanes

Some of the types of behavior which the teachers selected, for both long and short-term reward, were the following (class rather than individual effort was being judged):

1. Listening attentively
2. Raising hands to talk
3. Writing their names on their papers
4. Entering the classroom quietly
5. Picking up paper from the floor
6. Developing vocabulary and arithmetic skills

7. Following directions

8. Participating in class discussion

9. Cooperating with classmates both in class and on the playground

Also illuminating were comments that the teachers wrote on their reactions to the reward procedures. Several intend to continue to use the reward strategies in their classroom although they will no longer be participating in experimentation. One teacher commented,

> At one time I would have favored the short term but now I see a most effective use for both, following a certain sequence. In another year I plan on using the following procedure. I would start with a short range reward for about one to one and one-half weeks such as extended recess with teacher at nearby park. Behaviors to be stressed would be very simple. I would only have about two or three--e.g., saying good morning and following simple direction of getting out pencil. I would then give points after a short given amount of time. I would do this for a period of eight to ten weeks stressing the needed behaviors and increasing the amount of time for visual recording of points and also surprising them with points to keep them from guessing my procedures. In regard to reminding them of what they are working for and how they are to attain it, at first it would be daily, then kept at a bare minimum. After this period of time I would go on long range for about six weeks stressing academic behaviors and group evaluation of goal achievement.
>
> During the next semester I would use a reward system for each reading group stressing a particular talent or needed behavior. Each group will work for this reward for the whole class, e.g., top group will work for a movie; middle group will work for refreshments viewing movie; low group will sell tickets and arrange room for movie. Each group will have decisive powers for the whole classroom at attainment of its goal.
>
> I'm very anxious to try it next year.

Another teacher wrote, "I liked using short term at the beginning of the year particularly for learning first-grade routine and behaviors of control and discipline. Long-term reinforced schedules, I think, would probably be just as effective, if not more so, with more mature children, perhaps second-semester first-grade, in terms of academic growth."

A third teacher saw a great deal of difference in the performances of the children this year after following the two rewarding schedules. In her words,

> One outstanding difference I have noticed in the children this year while working for rewards is increased endeavor earlier in the semester and a great deal of "bubbly" enthusiasm. Some of the more able students have seemed quite concerned at times about the less able students, even to the point of wanting to do their work for them in order for the class to receive the reward.
>
> When the emotional climate of a classroom is properly developed, each child feels individually responsible for discipline. Feelings of self-esteem develop and help produce self-discipline. Academic learning improves in a flexible, democratically-controlled classroom.

Finally, the following comments were received in response to the question, "Which reward procedure did you like best?"

> Long--because they were working longer and harder and doing more important things (academically) which gave them more time to achieve these goals. However, I think it might be better to "reward" them by moving the monkey when they have achieved something they are working on--right then--not to wait two days or at the end of the day, and if they reach 100 points in a week, they should get the reward, or they may not reach their goal for a much longer period of time than the specified six weeks. I think it would be more effective.
>
> I did like starting the year with short-term reinforcement because they were immature and didn't quite understand what was going on. They needed to be shown that I meant to keep my word in a short period of time. Otherwise, I think they would have become disinterested and quit trying. (teacher comment)

> Long--my class seemed to be enthusiastic all the way through the first six weeks. I enjoyed it thoroughly. My opinion is that short-term is best for discipline since the children are constantly (daily) reminded of the reward.

One of the teachers kept a log of children's comments about the various rewards. The following comments are concerned with the children's anticipation of a long-range reward, the trip to the teacher's house for lunch.

Initial response--"If my mom will let me."

Second day--"What section of town do you live in?"
"My mom said I can go."

When we reached 54 points--repeated often after that:
"The monkey sure is happy."
"Look at his face."
"He would be sad if we weren't good, and he had to stay at the bottom."

During recess girls came in to ask if they could wear shorts or long pants the day we go to the house.

Ernie withdrew from school. Comment:
"Now Ernie can't go to your house. I think he's going to cry."

"How are we going to get to your house?"
(1) Teacher can make several trips with car.
(2) Danny N.: "We have a pickup and could take lots of kids."

"I hope your house is white."

"There are some kids peeking into our room to see how many points we have!"

Experiment 3. Correlated Reinforcement*

By the spring of the 1967-68 school year, Southwestern Cooperative Educational Laboratory, Inc., decided that a more refined investigation of reinforcement needed to be undertaken. The study was to proceed in a logical sequence by building upon the empirical results of the previous 18-week study. The new field-research project was predicated upon a need to develop a design which would be tighter in structure, though more limited in curricular scope. Additionally, it was felt necessary to specify with further precision the learning criteria for which rewards were to be distributed. In the previous study more reliance was placed upon the somewhat impressionistic and subjective judgements of the teachers, who decided when the behavioral criteria which could be rewarded were met.

The central concern of SWCEL investigators did, however, focus upon the question of the nature of reinforcement itself. It was assumed that the efficacy of reinforcement could be increased if instead of requiring the child to make a particular response for a particular reward, the quality of the child's response would be systematically varied with a reward of differential quality. Because of this important distinction between the two types of reinforcement systems, perhaps a concrete example would simplify the significance of the point discussed here.

Suppose that a teacher set up her learning criteria to be such that when 75 percent of her children recited the flag salute correctly, they all would receive a reward, such as an M&M. Thus, there is a one-to-one relationship between the response and the reward, and also, an all-or-none principle involved. That is, either the correct response is made or it is not made, so either a reward is given or is not given. We call this traditional reinforcement.

---

*Experiment conducted at SWCEL by Madeleine Speiss and Eleanor Leventhal.

Now, let us assume that if 75 percent of the class made the correct response (flag salute), they might each get an M&M candy. However, if 90 percent of the class made the correct response, each child would get two M&M's. For our purposes, we call this correlated reinforcement.

Many of the studies in reinforcement, characterized by the systematic variation of some qualitative dimension of a reward with some qualitative dimension of the response, have been concerned with individual behavior. Our study extrapolated these same principles to group behavior. We do not think it is either "psychologically" wise to single out individuals in a classroom, nor do we think such a procedure is realistically efficient for large classes of children.

With these considerations in mind, SWCEL conducted a four-week study based upon correlated reinforcement. The design of the study afforded a test of the hypothesis that the quality of class performance can be raised to a higher level by using a graded, qualitative reward system (correlated reinforcement) as opposed to an all-or-none system for dispensing reward (traditional reinforcement).

The subjects in the experiment were the same first-grade children who participated in the previous study in which only traditional reinforcement was used.

Behavorial objectives which were to provide the content of the learning tasks were taken from the cognitive domain (mathematics lessons) and from the social control domain (attending). Tasks from this latter domain were chosen by the experimental teachers. The tasks were then specified in terms of the criteria for acceptable qualitative differences in response levels (measured as total class percentages of correct responses). Also, the qualitative size of the reinforcers were designated for each task.

Next, the procedures for the study trials were arranged so that in the first week the children were presented with one learning task using traditional reinforcement. Under this condition, the children either met the criterion level or were not rewarded. For the next succeeding two-week trial correlated reinforcement was employed. In this condition the rewards were specified for the minimally correct percentages of classroom responses. If the percentage of correct responses reached a higher level of performance, the magnitude of the reward was increased. Finally, in the last week of the study, there was a return to the traditional reinforcement schedule.(see Figure 9).

The results were quite interesting. It was evident that the performance rates of the class in the first week's trial showed gains, with the exception of a one-day curve dip purportedly attributable to the imposition of punishment that day by one teacher so that her class's mean percentage scores depressed the overall effects. Correlated reinforcement was introduced after the first weekend rest. There was a sharp rate of acceleration under the new condition. Generally this curve increased, but tended to plateau after a point. With the reintroduction of the original

Rules for Administering Rewards

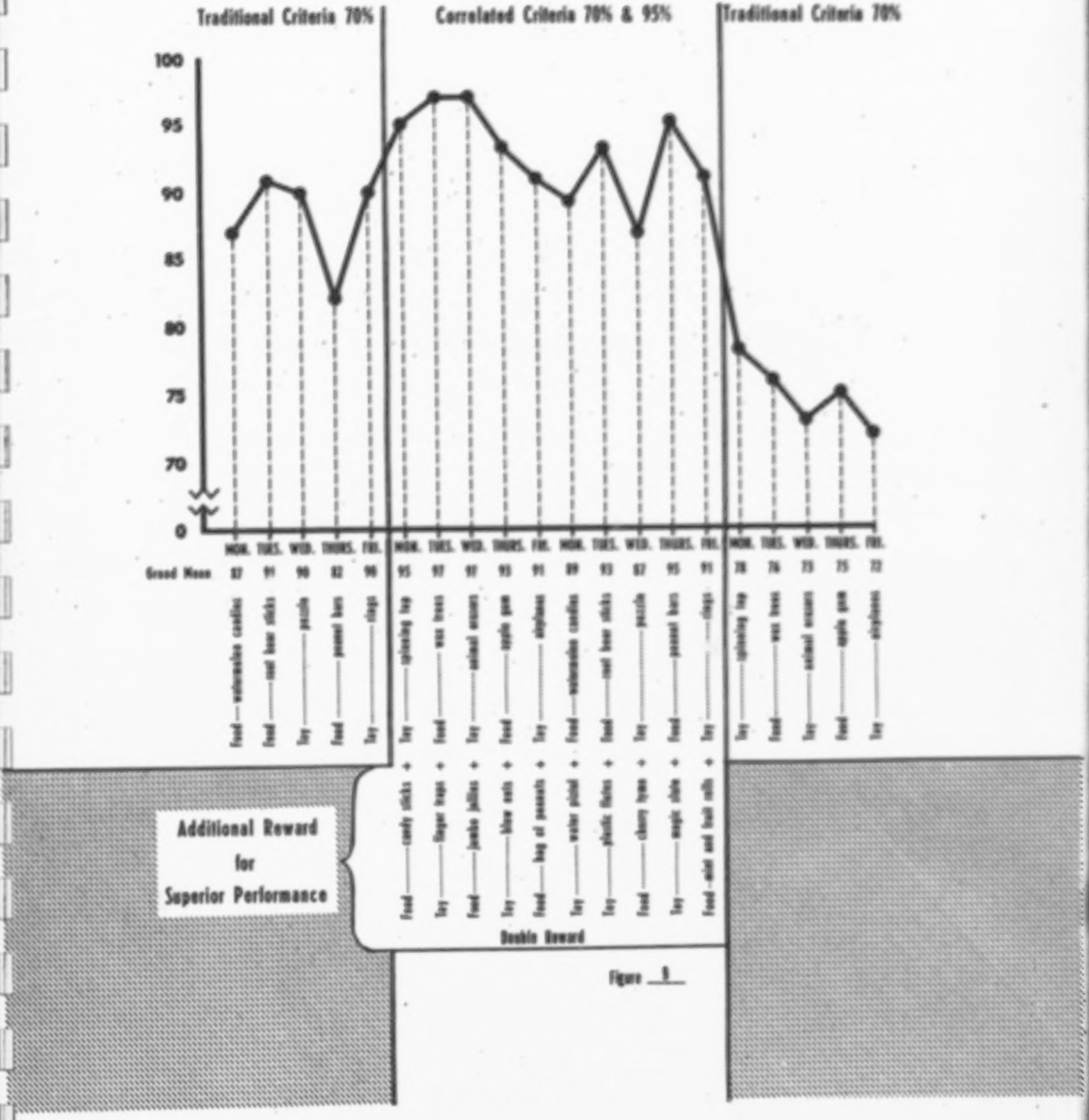


Figure 9

traditional reinforcement condition, the curve of acquisition took the largest drop, and continued to decrease until the termination of the study.

These results raised more questions than they answered (which is healthy enough in the behavioral sciences).

One could argue from these findings that correlated reinforcement was more efficacious than was traditional reinforcement. This could be supported by the fact that when correlated reinforcement was introduced, the performance level shot up, and symetrically took its greatest dip with the reintroduction of the first condition. However, and this perhaps does not need to concern the educational practitioner, these results could also be explained on the basis of other propositions. For example, suppose reactive inhibition (i.e., fatigue) had built up by the end of the first week's trial; the weekend rest would have dissipated this inhibition.

Could this have confounded the explanation that would attribute the rise in performance to the new condition? The drop-off measured when traditional reinforcement was reintroduced could have indicated an accumulation of conditioned inhibition. Suppose the school district decided to pay you $8000 a year for being in school every day, and then gave you a $2000 bonus if your children scored high on some standard achievement tests and if you had a perfect attendance record. After that arrangement, let us imagine that you were informed you would be back on the $8000 salary schedule. Might your performance then drop off?

In conclusion, one might risk saying that organisms (and that includes human beings) tend to maximize their rewards while minimizing their efforts.

It seems that when people are presented with the added incentive, acquisition or performance rates could go higher than under simple all-or-none conditions. With some of our questions left unanswered we can look forward to the next few years during which we can continue our quest to find better ways to help our children.

We have taken some small, first steps.

Teacher Reactions

Following the correlated reinforcement study the eight experimental teachers were requested to relate their classroom observations and impressions gathered during the four weeks of experimentation. Included are the teachers' and pupils' opinions and reactions to the study. This kind of feedback from teachers is very important, enabling the SWCEL research teams to refine, improve, and develop new classroom management studies.

Correlated Reinforcement Experiment

Question A. Relate some of the positive reactions of the children to the vigilance experiment, how they are responding, how they feel toward the rewards, etc.

Comments.

1. They felt very satisfied in being perfect--100 percent.

2. Very curious to see the surprise in the mornings.

3. Two classes liked the candy rewards more than toys; the other six classes liked toys better.

4. They agreed on the teacher's evaluation of the performed task and stated names of children who didn't perform correctly.

5. Children became more tolerant of children who didn't perform correctly.

6. Paid more attention to rules of the game.

7. They carried tasks over even when not receiving rewards.

8. The children really enjoyed the vigilance experiment--it is a game to be played. They love the rewards--especially the toys! They have succeeded far more often than they have failed.

Question B. Relate some of the positive reactions of the children to the mathematics experiment--how they are achieving now as compared to work before the experiment, how they respond, how they feel toward the rewards, etc.

Comments.

1. They enjoy being rewarded:

    a. Every morning they come in early to see what the rewards are.

    b. One day two girls came in at lunch and said, "We were hoping the bell would ring early so we could see what our class average is and get the rewards."

    c. Wanted to get 100 percent class average.

    d. When they missed a second level reward they asked me to "put it with another reward tomorrow so we can get it then."

2. Actually their achievement level was high to begin with. The high ones are still high (however, some careless errors have been corrected). Some of the children seem to be trying harder.

3. Children work harder on math.

4. Some children would help others having troubles.

5. Children enjoyed working for and attaining rewards.

6. Children asked who gets the rewards when they don't.

7. The middle group worked more at attaining goals.

Question C. What is your reaction to the particular experiment you are working on, either vigilance or mathematics? What seems to be the general reaction of the class?

Comments. 1. Vigilance.

a. The vigilance experiment is fun. The value of the rewards is great and could be used in planning classroom projects and activities--perhaps rewards would improve work habits of immature children.

b. I enjoyed having everyone in the class feeling capable of receiving the rewards. They were easy tasks and it was difficult to see violations. They all felt very successful. The children loved the experiment.

c. I enjoyed the vigilance experiments--seeing the children all succeed so often. My class became more tolerant of each other's failures. They straightened out one or two children most successfully. The children responded to the experiments with great enthusiasm. The success scale was too easy for the folded hands, standing up and flag. Children did not feel they should be rewarded if three goofed off. This last weeks' rewards were not as successful due to the repetition.

d. The children were highly motivated by the vigilance experiments. On the whole it made the children more aware of rules to be followed and the actions of their peers at the time of the vigilance test. The class as a whole met with much success and feeling of accomplishment.

2. Mathematics.

a. I enjoyed doing this because the class had to work for the reward. I felt that because of what we did at the first of the first semester--short range--they were under the impression that they would get the math reward anyway. Therefore, the top group was careless in their work. They were excited when the score was in the 90's--but did not try much harder. One little girl said, "One reward is better than nothing",when I asked if they would rather work to get two rewards or one.

b. The mathematics experiment was a success in my room. I feel it motivated the children in attempting success in their math lessons. At times, however, I thought the class average should have been higher, particularly at the beginning when lessons were easily mastered and when children were working for two levels of rewards. Rewards were enjoyed and the children were disappointed when they didn't receive them.

c. Even though the children really looked forward to receiving the rewards and were willing to work hard and do their best, I had to keep reminding them, even push them, to finish their math in time for me to check their papers.

d. The children understood the method of computing the scores and some of the good students felt honor-bound to assist the less able ones in order that they might receive the reward or rewards. They were pleased to receive one reward, and overjoyed to receive two rewards. The candy was preferred over the toys.

CHAPTER X

OUTLINE OF LEARNING THEORIES AND SUGGESTIONS FOR TEACHERS

Introduction

Our discussion of the learning process has closely followed Miller and Dollard's model; we have identified four components of learning, and we have examined each of them in detail.

It is clear that this model is a very helpful and understandable way, but not the only way, of describing the phenomenon of learning; many other psychologists have constructed their own theories which attempt to explain the basic mechanisms of "behavior change due to experience."

None of these theories is entirely satisfactory; each of them has its faults and limitations. However, many of the ideas developed by these psychologists and presented in this chapter have relevance to the educational setting. Different points of view suggest alternative methods and techniques for solving problems which arise in the classroom.

It is hoped that our intensive analysis of one learning model will help the teacher to understand the other theories presented here, and, of course, teachers are encouraged to read more extensively in their individual areas of interest.

Pavlov's Principles

Summary. The important features of Pavlovian theory are essentially:

a. The basic notion of conditioning as an adaptation or translation of the principle of association by contiguity from the realm of ideas to the area of behavior.

b. The principle of generalization.

c. The principle of extinction.

d. The extension of the principle of extinction to cover the extremely important matter of dissemination. We find the basic goals of education embodied in the concept of dissemination as a function of the extinction of undesirable generalized conditioning. The process of education might even be defined as the formation of finer and finer discriminations.

Practical Application. Pavlov emphasized the role of individual differences in temperament observed in his animals. A practical conclusion for the teacher is to take the learner's temperamental disposition into account in relation to the subject matter or kinds of responses to be taught. Anxiety levels of students bear upon learning.

The teacher, whether he knows it or not, is a conditioner of emotions. The learner can, in general, be conditioned to respond favorably or unfavorably to his teacher, the content material, the environmental surrounding, indeed to anything that can function as a stimulus.

The Pavlovian principle of extinction contains a practical application for the teacher. Some undesirable emotional responses are learned and when it is recognized as a conditioned response, it can be extinguished

3

by withholding the unconditioned stimulus or reducing the strength of the conditioned stimulus below the level effective for evoking the emotional behavior. In many cases, it might be necessary to introduce some interfering stimulus or situation.

Take advantage of generalizations when you find it safe. Always consider the range of stimuli that may be operative. Watch for undesirable generalizations. Generalization can be expected to generate appropriate behavior to similar stimulus situations. Sometimes teachers confuse students by bringing up exceptions to rules. The rules are not truly rules if there are exceptions. The generalization is not a generalization if it doesn't fit.

Theory of Thorndike

Summary. Thorndike is identifiable by his emphasis on his Laws of Readiness, Exercise and Effect. His modifications have reduced Readiness and Exercise to rather meaningless stages and left only the Law of Effect to carry the burden of an explanation of learning. He even modified this law to eliminate punishment as a component.

Thorndike emphasizes "trial and error" and "chance success" and makes out of learning a blind, mechanical process that leaves no room for "insight," "understanding" or "intelligence". A person learns by trying one response after another until finally he does what has been decided by others to be right and is rewarded. If given immediately, rewards would increase the probability that the response performed just before the reward was given would occur again in the same situation.

Practical application. The Law of *Exercise* points out that practice must be differentiated from more repetition which is meaningless. A practical suggestion here is that the teacher should follow every correct response with some kind of satisfier or reward.

The Principle of *Readiness* means that one does not attempt to teach an organism a response it cannot make. Probably the most satisfactory meaning of Readiness for teachers is that they must be certain that a response is available before they start to teach. Jerome Bruner, however, hypothesizes that any subject can be taught effectively in some "intellectually honest" fashion to any child at any stage of development. Bugelski[7] suggests that students should be permitted to try any legitimate study for which they show inclinations and they should be permitted to continue if they can match the progress of those selected for such studies by current methods. Priorities should be maintained, however. Mathematics is not a substitute for tying one's shoes.

The Law of *Effect* was the most important of Thorndike's principles; if you want someone to learn something, wait until he does it and then reward him. Also, reward immediately any desirable response in the teaching situation (but be cautious about rewarding errors).

Thorndike maintains that intelligence must be taught and that it doesn't generate spontaneously. After it is taught it will operate blindly. The admonition for the teacher here is not to be content with rough approximations where specific answers or responses are essential for subsequent success.

Hull's Postulates

Summary. Hull found overlap in the generalizations of Pavlov and Thorndike and thought that he could reconcile their views. He believed that Pavlov's classical conditioning was only a special case of Thorndikean learning, and he hypothesized that the stimulus was actually operating as a reward.

Hull stated his principle of Primary Reinforcement: whenever a response is closely followed by diminution of a drive or a drive stimulus, there will be an increment in the strength of the bond between the response and the stimulus or stimuli present at the time the response is initiated. This postulate assumes that there will be no learning unless a drive (physiological need) is present and reduced, that a drive need not be fully eliminated, and that learning will proceed by steps of unspecified size.

The Continuity Hypothesis states that learning is cumulative and continuous. Each reinforcement adds strength to the learning (although there are times when we do not see it taking place). This assumption that learning occurs even when it cannot be detected is difficult for some teachers to accept.

From Thorndike's Law of Effect Hull derived his principle of Secondary Reinforcement in an attempt to solve problems in human learning; teachers do not usually reward children with food and water. In simple terms this principle is that any stimulus that is present when a primary reinforcer is administered will take on the characteristics of the primary reinforcer.

Hull had to introduce the concept of Secondary Drive along with secondary reinforcement to handle the problem of human learning, because one does not treat humans the way one does animals in developing hunger and thirst. Secondary Drive is described as any stimulus that is present at the time a primary drive is activated. It takes on the properties of the basic drive and may serve as a basis for future learning (through drive reduction).

Hull postulates Reactive Inhibition, which is analogous to fatigue. With each response some reactive inhibition is developed. Eventually the learner must rest.

The Goal Gradient hypothesis is: the closer the learner approaches the goal, the more active he becomes. The important point in this statement is that in any sequence, the responses that are the closest to the reinforcement would be most effectively learned.

Another concept is the Habit-family Hierarchy. This concept is developed on three levels. First, organisms are very likely to vary their responses to any single stimulus. These responses are on a hierarchy from low to high probability; social education consists of changing the relative positions in a hierarchy. Second, the goal response can be arrived at by alternative means, and all of these alternative ways of arriving at the goal must be learned separately. Third, the goal will remain the same regardless of the route taken to achieve it (i.e., changing routes in the process will still bring one to the goal).

Practical application. The Continuity Hypothesis leads us to assume that teachers should not be discouraged at a pupil's slowness or failure. Keep eliciting the proper response and rewarding it; eventually the response will be made when the conditions call for it.

The Habit-family Hierarchy tells us that learning consists of rearranging the probabilities of responses. If there is reason to believe a certain response pattern is possible, that pattern can be brought under control of other stimuli, it can be learned. The first step in learning is to identify and eliminate competitive responses. This concept also tells us to avoid rigidity in teaching. Introduce a variety of techniques for problem-solving. Ingenuity does not come from an empty head, it can be taught.

The Goal Gradient hypothesis (the response closest to the reward is learned first) gives us a rationale for practice. Determine the relative need for practice at each step in a sequential act and schedule such differential practice, including the separate reinforcement of each step, until all parts of the task are equally well learned.

Hull's postulate of Reactive Inhibition gives us the practical suggestion that we are probably wasting our time trying to teach when the learner is tired, cranky, fussy, sleepy, or otherwise avoiding the learning situation.

Skinner's Views

Summary. Today Skinner is recognized as Mr. Reward Psychology. He views his work as "operant conditioning," where the organism operates on its environment and changes it in some way. This is different from Pavlov's "respondent conditioning" where the environment operates on the organism.

Skinner makes use of the concept of Secondary Reinforcement, as did Hull, but he has modified the concept. He says that before a stimulus can be a secondary reinforcer, it must not only accompany the primary reinforcer, but precede it; this makes it difficult to distinguish a secondary reinforcer from discriminated stimuli. It is possible to avoid confusion if we remember that one stimulus may be the discriminated stimulus and a different one may function as the secondary reinforcement.

Skinner is against the use of punishment or "reversive stimulation" and maintains that this only serves to suppress a response momentarily, unless it is continuously applied.

The basic emphasis of Skinner's work is on response. The real problem is how to control conditions that will alter response rates (increase either the probability of its recurrence or its extinction).

What conditions contribute to behavior rate change? Some type of deprivation is often necessary so that its alleviation will be rewarding. An effective way in controlling the response rate is the pattern or schedule of reinforcement. In this scheduling, Skinner uses a ratio schedule and an interval schedule. In the ratio schedule, the reinforcements are presented after a specified number of responses. The interval schedule calls for delaying the reinforcement until a specified time has elapsed. Both of these schedules can be fixed or variable.

Practical application. Probably the items of greatest interest to teachers are Skinner's ideas concerning the value and importance of reward. He would subscribe to two mandates:

1. Do not use punishments to foster learning. Skinner has found that punishment is actually ineffective and is accompanied by undesirable complications. He advocates using an extinction procedure or withdrawal of the reinforcement that had previously sustained a certain behavior.

2. Do not reinforce undesired behavior. Skinner doesn't imply that we ignore undesirable behavior, but that we should prevent reinforcement from following undesirable behavior. The difficulty here is that reinforcement may come from sources over which the teacher has no control.

Teachers should beware of random or unplanned reinforcement. The learner will learn whatever he has been doing just before the reinforcer was applied. Frequently he learns wrong or meaningless responses. He might as well be guided in his learning and learn those responses that have some merit in civilized life. Skinner[42] even spells this out clearly in a statement: "If a learner fails to learn, it is the teacher's fault. With appropriate instruction, all pupils should get A grades. . . ." It does merit some consideration from teachers.

Other suggestions for the classroom teacher that can be implied from Skinner's work are as follows:

1. It is important to reinforce every desired response in the early stages of training.

2. Once the learning is well under way, it is advisable to begin to omit reinforcements from time to time.

3. Use secondary reinforcers more often; restrict or eliminate the use of secondary aversive stimuli.

4. Establish convenient secondary reinforcers that can be introduced rapidly at any desired stage in a sequence, in order to keep a learner actively engaged after a preliminary step has been taken.

Guthrie's System

Summary. A thumbnail sketch of Guthrie's views shows his central proposition to be that learning consists of conditioning responses to stimuli. While this sounds somewhat Pavlovian, it emphasizes the association or conditioning of a stimulus to a response, whereas, in Pavlov's system, one stimulus was conditioned to substitute for another.

Practical application. Taking Guthrie's thesis and determining what may have practical application for the classroom situation, we find four basic ideas:

1. Break down any given assignment into its most minute elements and teach those elements.

2. Specify the answer as well as the question and require the precise response desired.

3. Do not allow a learner to leave a learning situation with a wrong answer or incorrect response. Let the last response that occurs be correct.

4. The teacher must be in charge. He does not try to teach when he is not in charge, when he has reason to believe that the behavior he is looking for will not occur.

Tolman's Position

Summary. Tolman was one of the first behaviorists to face up to the fact that the S-R approach, with its preoccupation with simple behavior of simple animals, provided only a limited account of human behavior. Tolman believed that additional elements, "intervening variables," had to be interposed between the S and R (stimulus and response) in the S-R formula. He became known as the S-S psychologist because of his sign-significate theory. Some new or novel stimulus (sign) became associated with an already meaningful or important subsequent stimulus (significate) through a series of paired experiences. He also uses what he calls the S-S Expectancy Principles: when a stimulus (sign) is followed by a second stimulus (significate), the learner will acquire an association between these stimuli.

Practical application. If we put Tolman's propositions to work in the classroom we would find at least two practical applications:

1. It is not necessary to reward learners in order to secure learning. It is only important that something "significant" (meaningful, important) happen after a sign (a signal, stimulus) occurs.
2. The degree of learning (acquisition, achievement) may not always be evident under fixed operating conditions. A change in incentive (reward, punishment) upward or downward may reveal a change in performance.

Mowrer's Theory

Summary. Mowrer believes that learning is essentially Pavlovian conditioning with some added elements. Pavlovian theory rests on the autonomic nervous system which has two sub-systems: the sympathetic system which operates in or is dominant in negative emotions, such as fear or anger, and the parasympathetic, which is dominant in the more positive states of joy and love. It is these emotional states that Pavlov was conditioning. Thus, for Mowrer, conditioning follows the general lines of Pavlov, but the responses that are learned or conditioned are strictly emotional and primarily of two general categories: hope and fear.

Mowrer provides two types of reinforcement, incremental and decremental. If the stimulation rises in amount or intensity, it is proper to call it incremental. If the stimulation declines, the term decremental is suitable. Both of these are common enough and both serve as bases for learning in that incremental reinforcers are unconditioned stimuli for hope.

Practical application. If one follows Mowrer's views, there are certain practical applications for teachers as follows:

1. Punishment can be effective in controlling behavior if it follows the behavior rapidly enough to allow for conditioning the feedback stimuli from the response to fear.
2. Rewards must follow immediately upon a response to permit conditioning of feedback stimuli to the emotion of hope so that similar behavior can be fostered later.
3. It is not necessarily true that learning requires overt responses from the learner, at least at the beginning of learning.
4. Learning can occur, to at least some degree, if not to a major degree, when one is merely sitting, looking and listening.

5. Learning involves prior emotional conditioning through reinforcement operations, so that cues or stimuli that are to become releasers of emotional reactions can come to operate as secondary reinforcers.

6. It is not necessary to reward or "reinforce" a learner for some action. It is enough that he sees someone else reinforced for an action.

7. With an appropriate background of conditioning, a learner may on some occasion have a positive emotional reaction to some apparently "novel" stimulus or stimulus pattern.

The foregoing material was presented with the knowledge that none of these theories or positions have universal acceptance. However, some ideas that have value for the classroom teacher were discussed with the hope that he may gain new insight into his performance as he plys his profession. An outline of the various positions on learning theory is presented in the appendix.

CHAPTER XI

AN EXAMPLE OF CLASSROOM MANAGEMENT: TEACHING A CHILD TO SIT DOWN*

One of the first of many new behaviors that a child may be required to learn when he enters the strange world of the schoolroom is to sit down when he is told to. Surely there seems nothing particularly complex about sitting down, but many children entering school are unable or unwilling to engage in this behavior on request.

Sitting is not important in itself--children probably can learn school tasks equally well while squatting or standing--but sitting upon request preliminary to attending to the teacher and to a task is basic to present educational procedure. If one cannot induce or persuade a child to meet the educational establishment at this basic level, the outlook for teaching him more complex tasks is not good.

This discussion will be concerned specifically with an analysis of the process of teaching a child to sit down on a chair at a teacher's request. We shall have something to say about larger issues also, for, using essentially the same procedure, there is much that a teacher can do to facilitate learning of appropriate classroom behavior.

Our intent, in general, is to consider step by step some techniques that can be used to identify specific problems in children, to make children more comfortable in a new situation, and to shape the behaviors that are desirable for the child to have in order to enter into curriculum activities productively.

---

*Adapted from a manuscript prepared by Learning Incorporated, Scottsdale, Ariz., in consultation with Dr. Nancy Kerr. The background material for this paper was based on extensive discussions and observations, and on research reported in Technical Papers No. 3 and 4 prepared under USOE Grant No. 32-13-7020-5031, directed by Dr. Lee Meyerson.

As a specific example of the general approach, a detailed description will be given for teaching a child to sit in a chair across the table from the teacher and attend to the teacher and the task at hand. In order to teach a child something, you should first consider the following:

1. What should he be doing? (Defining the response: the behavioral objective.)
2. What is the child doing now instead of the desired behavior? (Defining the problem.)
3. How can you arrange the situation to increase the chances of his engaging in more appropriate behavior? (Motivation and cue.)
4. What can you do to show the child that he is on the right track and give him a good reason for cooperating with you? (Reinforcement.)
5. What kinds of behavior can be considered approximations to the correct behavior? (Shaping by successive approximations.)
6. What can you do to insure that he will continue to cooperate once he has learned to do what you ask? (Maintaining the behavior.)

Part 1. What should he be doing? (Defining the behavioral objective)

Too often the goals of education are described in such ambiguous terms and ways that we end up not really being sure what we expect children to learn. And if we don't know, how can we expect a small child who has never been to school to know? For example, it is common to describe the goals of a kindergarten program in such terms as "helping the child to adjust to a group situation," "developing healthy attitudes toward school," "increasing awareness of the world about him," or "stimulating self-expression."

These are laudable goals, but we cannot really begin helping the child to attain them until we define them in terms of observable behavior that we can teach. When we observe a child, how do we decide whether he has adjusted to a group situation, whether his attitude is healthy, whether he is more aware of the environment than he was a month ago, or whether he is expressing himself? Our judgments can be based only on the things the child does . . . his behavior.

> Suppose you were to observe a teacher with two children in a kindergarten classroom. The children are playing about the room and the teacher sits at a table with some pictures she wants the children to come and identify. She calls them to come and sit down at the table. One child at the start is examining and playing appropriately with the toys in the room. He looks at the teacher immediately when she speaks and quickly follows her instructions to come to the table. He sits down in the chair and begins inspecting the pictures she has put out, asking what they are going to do. When the teacher asks him to identify a picture, he quickly points to the object and calls its name. He answers the teacher's questions about the picture and volunteers a comment or two.
>
> The second child at the beginning of the sequence is more quiet--not playing with toys--just standing, staring aimlessly about the room. He does not turn when the teacher speaks and only takes a step or two when asked to come and sit down. He finally sits down only after repeated suggestions from the teacher, who is already working with Child A at the table. When Child B finally gets to the table, he grabs a picture from Child A's hands and flaps it up and down on the table without looking at it. When the teacher takes the picture and gives it back to Child A, Child B cries a little. The teacher gets him set down in a chair and presents pictures to both--A does as described above--B does not answer; at first he doesn't even look at the picture. Finally, he points slowly to something on the picture but utters only one word softly and with prompting from the teacher. He looks away again, sitting slouched and sideways on his chair as the teacher shows the next picture to Child A.

You, as a teacher, would not have a difficult time deciding that Child A has made a better adaptation to the school situation, is more responsive, and has a more positive attitude toward learning. If we ask how you came to such a decision, it would be easy to recognize that it was based on the behavior of the children. After all, we know nothing else about them except what we saw.

The critical question is: Exactly what did the two children do that was different?

Our first task, then, is to decide what specific behaviors would be desirable in a given situation. Of course, individual teachers will have different opinions on some details. For example, it is well known that in some classrooms, it is considered acceptable for a child to leave his desk and get a drink of water whenever he feels the need. In other classes, he is supposed to raise his hand and request permission, while still other teachers require that all children wait until recess. However, there are few who would argue with the notion that it is desirable for a child to play with the toys that have been set out for him, to look at the teacher when she speaks, to come when he is called, to sit down at a table when there is work to be done, to attend to the task at hand, to answer questions, and to volunteer speech--at least when the teacher wants to listen.

These activities represent the first concrete goals we may wish the children to attain. We have called them "behavioral objectives." The word "terminal" does not refer to goals that you wish to attain at the end of a semester or a year. It is always more practical to define your specific goals in terms of the behavior you want the child to learn today.

When you have compiled such a list of these behaviors, you can then decide on the first things you want the child to learn. When he has succeeded with all the items on the first list, you make a new one. Even within your first list, it will become obvious that some items will be easier to teach if others are already learned. For example, it would be easier to teach a child to identify pictures if he has already been taught to sit at the table and attend to the materials.

Summary. The first step in successful teaching is to decide on the goals, or behavioral objectives, that a child should attain. It is essential that these be specified in terms of actual behavior that you can observe and teach rather than in ambiguous abstractions that may mean many things. It is equally necessary that the terminal behaviors be specified in terms of what you want the child to learn right now rather than in terms of long-range goals. It often takes practice on the part of the teacher to learn to observe and list the actual behaviors that lead to her conclusion that a child is "well-adjusted" or "well-motivated."

Part 2. What is the child doing now instead of the desired behavior? (Defining the problem)

Teacher education programs often emphasize the need to help teachers learn to identify the "problem child." In part, this task is simplified greatly once you know the terminal behaviors that the child should be engaging in right now. Then any child who is not doing it has a "problem." For example, if the child is asked to come and sit down at the table, and he fails to do so, he has a problem. When children do not respond to a teacher's request to come and sit down at the table, they may be doing a variety of other things instead--and doing them for different reasons.

What three children have learned in three unique home environments will be reflected most keenly in their differing responses as they enter the classroom situation. It is at the beginning of training, rather than at the end, that individual differences are most apparent and most critical in providing guidelines for the teacher's initial training efforts. In short, we must know where we are as well as where we are going before we can fill in the steps between. To find out where we are, we must once again look at the behavior of the child.

> Suppose we observe three teachers, each with a single child. In each case the teacher first calls the child to come and sit down at the table where teaching materials are available. She coaxes some. Giving up on that, she will attempt to get the child to ride a tricycle, and finally asks him a question about the pretty flowers on the bulletin board.
>
> Child A (Shy) responds as follows: He begins by sitting or standing on the sidelines, looks at teacher out of corner of his eye when she calls him, but he doesn't move--turns away slightly as teacher approaches--pulls back as teacher introduces tricycle--silently refuses to get on--finally, passively allows teacher to place him on the seat, but he "freezes" in the position in which he is placed and whimpers when teacher tries to give the tricycle a shove. Teacher removes him and he remains standing looking down at his feet as teacher asks a question. As teacher leaves the scene, the child relaxes his muscles and looks around the room again as at beginning of sequence--remaining in the same spot.
>
> Child B (Resistant) looks at teacher and smilingly moves to side of room farthest from table--watching her constantly. The next time she calls him, he starts to move toward the table, but stops to tie a shoelace, very slowly, looking at the teacher frequently as he does so. Teacher leads him to tricycle and he takes handlebars as if to get on but then, laughing, rolls empty tricycle across the room and looks at the teacher. She points to the bulletin board and asks a question--he looks quickly at the board and back at the teacher, saying that he has to go to the bathroom.
>
> Child C (Distractible) comes amiably enough when teacher calls and sits down for about two seconds and then darts away to pick up a ball he has spotted. He examines it, bounces it, and as it bounces away, he turns to the teacher who invites him to ride the tricycle. He almost gets on, but becomes intrigued with the pedals and sits on the floor to spin the pedals with his hand; with the pedal slowing to a stop, he starts to move away as the teacher points to the board, asking a question. As the teacher is directing him to look at bulletin board, he looks at teacher--answers the question with a brief "un-uh," and is off to the sandbox.

None of the children sat down at the table when they were supposed to, rode the tricycle or answered questions appropriately. You can review what they did differently and you may speculate about why each child behaved as he did.

The "shy" child is characterized by a large repertoire of avoidance behaviors. He simply retreats as much as possible from an environment in which he is uneasy and frightened.

The "resistant" child is very much in contact with the teacher and the environment. He may play quite appropriately--until the teacher asks him to do something in particular. His special delight seems to come from badgering the teacher. He sometimes comes from a background in which good behavior is not recognized and reinforced when it appears; the only way to get attention is by being uncooperative in some way. In addition, it is not uncommon to discover that these children have learned that avoiding following instructions from adults is a good way to avoid failure. Where parental expectations have been too high, it becomes safer to get attention by various stalling tactics than to try to do what is asked and fail.

The "distractible" child simply flits from one thing to another and has not learned that there is a time and a place for various kinds of behavior. His life frequently has been one long "free play" period.

There is some danger in using such labels as "shy," "resistant" and "distractible." Too often, labels give the impression that one is talking about some deep unalterable personality characteristic of the individual. The labels here refer only to classes or patterns of behavior that many children exhibit rather persistently. As the behavior changes, so does the label. It is easier to use a single word than to enumerate a list of behaviors every time you want to talk about a particular group of responses.

We have avoided mentioning the "aggressive" and/or "destructive" child because our observations indicate that the label is more prevalent than the behavior. If a child gets into one or two fights a day, he is very apt to be considered "aggressive." He isn't always fighting--it only seems that way. In reality, he has spent most of his time doing other things. In other words, during extended periods of observation, we must be concerned not only with what the child does, but how often he does it.

We have discussed three "types" simply because these behavior patterns appear so commonly among children who fail to follow teacher instructions. They provide the most frequent sets of starting behaviors which need to be changed into sitting at a table and attending to a task.

Summary. Having defined the desirable behaviors in Part 1, we again observe the behavior of the child in order to take the second step--that of defining what he is doing instead of the appropriate behavior. We must start with what the child is presently doing and gradually help him to change that behavior to more desirable behavior.

Part 3. How can you arrange the situation to increase the chances of his engaging in more appropriate behavior? (Structuring a new situation; motivation and cue)

It is reasonable to assume that a child placed in a classroom for the first time is in a psychologically new situation. The newness is related only in part to the fact that he is in a room that he has never been in before. The more critical aspects of the "newness" are that he has not yet learned the kinds of behavior required by the situation. He doesn't know what he is supposed to do, or what will happen to him if he does do it.

Even the middle-class white child who goes to a middle-class white school finds many aspects of the situation new. However, he also finds that the toys, furnishings, and people are similar in many ways to his own home environment. The child from a very different culture finds more drastic changes which make the situation even more strange. We asked some white middle-class children who were known to have adapted very well to their own school environments, how they would feel and what they would do if they were thrown into a strange school situation. For example, suppose there were no desks or tables and chairs--just rugs on the floor--and you didn't know whether you were supposed to sit on them, step on them, or lie down. Suppose there were a lot of strange things around and you weren't sure which were toys and which weren't to be handled--and even among the toys you didn't know how to operate them or what they would do. The majority of responses from the children can best be summarized in the words of an 8-year-old exuberant boy who said, "If I ever got into a mess like that I'd stand real still and not touch a thing until I figured out what was going on." Movies of him in this strange place would probably show the classic "shy" behaviors. A few children said they would ask the teacher many questions. When we added the condition that the teacher spoke a rather broken English and you really couldn't understand everything she was saying, they too decided that they would sit back and watch a while. They expressed feelings that ranged from "being scared" to "wondering." There was also evidence of some hostility. One commented that under these conditions she would just as soon be a drop-out. When asked what would be helpful in making them feel more comfortable, they expressed the wish that at least some things be around with which they were familiar, and that they be allowed to watch the other children in hopes of copying someone who did know what to do.

Their comments immediately suggest some ways of structuring the situation for children who appear lost in a new environment.

a. Find ways of bringing familiar things into the classroom and incorporating them into teaching materials. This is especially important for children coming from cultures other than that of the school system. For example, if you have Indian children from the reservation, determine what there is in their everyday life that could be used in school.

There's no rule that says all toys have to be manufactured by Mattel or Fisher. For example, bring in for "free play time" some of the playthings related to the specific child's background. If you wish to teach a child to count, he can learn just as well by counting sticks and stones as he can with more conventional materials. Same-different concepts can be taught just as easily using different designs on pottery as with kites that have different tails. If you wish a child to tell about a house, he will probably have more to say about a picture of his own dwelling than about a white frame house on Elm Street.

b. Provide models who can be imitated--the white child brought to the Indian demonstration school, the Negro child having the chance to be part of a white school environment (the Coleman Report). You can demonstrate some activities yourself. Others can best be demonstrated by children who do know how to ride a tricycle, who speak up and ask questions, and who engage in the prescribed learning activities. It might be feasible to bring in a couple of "stooges" for a few days if all the children ordinarily in the class are "lost." Or, it is possible to show movies to the children of similar youngsters going through the usual classroom routine. Care should be taken to insure that only good things happen to the models as a consequence of their appropriate behavior. It would be of little value to the "quiet" child to discover when another child asks for a glass of water, that instead of water, he gets a lecture on the pronunciation of words.

c. The more simple and well-structured the physical environment, the easier it is going to be to teach a child what you want him to know. This may come as a blow to teachers who slave for long hours creating stimulating displays for the classroom, but when you wish to teach a child to sit across from you and attend to the materials on that table, your job is to make yourself and those materials more attractive than anything else in the room. Sometimes this is best accomplished by eliminating some of the frills and attractive nuisances that may overwhelm the shy child, distract the distractible child, and provide ammunition for the resistant one. When you want children to have free play time, or explore whatever interests them, that's fine--have many things available. But when you want them to do something in particular, you will make it easier for yourself and them if you get the rest of the materials out of sight. As for teaching the child to sit at the table, set the table and chairs in the middle of the room, the pictures you want him to look at on it, and sit down at the table yourself.

Summary. We want to do everything possible to structure the classroom situation in order to facilitate the learning of the desired behaviors. We have discussed three possible ways of reducing the "newness" of school for children who are just entering:

a. Incorporate things that are familiar to the child into the learning situation.

b. Provide models and demonstrations so that the children can imitate and know what is expected of them.

c. Structure the physical environment so that the task to be learned is clear-cut and attractive, and distractions are eliminated.

Part 4. What can you do to show the child that he is on the right track and give him a good reason for cooperating with you? (Reinforcement)

Behavior has consequences. If some things we do are followed by desirable consequences, we have a tendency to do those things more often. If what we do leads to bad consequences, we are less likely to do them in the future. When our behavior is positively reinforced (good consequences occur) we are likely to feel successful. When our behavior is punished, or if nothing happens, we are likely to feel failure or frustration.

Perhaps the teacher's main function is to create a situation in which a child's good behavior is sure to result in consequences that are desirable to the child. In short, she reinforces or rewards good behavior and either ignores or punishes, if necessary, undesirable behavior. In order for learning to be effective, the reinforcer must be given just as soon as the behavior occurs. Since you want to be able to give many reinforcers immediately for many units of behavior, it is necessary to find ones that can be given quickly, in small amounts, many times, in such a way that they will not interfere unduly with the ongoing behavior that you are trying to teach.

The other essential characteristic of a good reinforcer is that it be something that the child likes. Following are some reinforcers that have proven effective in many situations.

a. Social approval. Words of praise, "Good, Johnny," "That's right, Susie," spoken in a pleasant voice and with a smile, not only act as reinforcers, but also give clear, immediate indications to the child that he is on the right track. Even children who do not understand English soon learn their meaning when the words are accompanied by warmth, pleasure, and gestures such as the teacher clapping her hands. To any child who desires to please adults, or who is pleased by their attention, the effectiveness of verbal praise cannot be overemphasized. Especially in cases where language is a problem, it is best to start the comment with the same few words--like "Good boy." Then it is often helpful to state exactly what the child has done right. "You picked it up"--or "You came right away." Whether it is best to give such praise quietly and gently, or to become very noisy and enthusiastic, depends in part on what you feel most comfortable doing and in part on how the child reacts. The extremely shy child might get scared out of his wits at a sudden burst of enthusiasm, while the distractible child might not even hear you if you praised him in a soft, quiet manner. The resistant child is least likely to be moved by words alone, and in his case even more than the others, you'd do well to back up those sweet words with something more concrete!

Another form of social approval that goes right along with praise involves a demonstration of affection--a pat on the head or back, or a big hug. Some children love to be picked up for a moment and joggled up and down. Again the intensity of such actions depends on both you and the child. A child who is accustomed to being struck may flinch if you suddenly reach out to pat him on the head. A very shy one may withdraw from any physical contact at first, and resist your forcing such attention on him. Contact with such a child is best initiated by him. Rather than grab him hold out your hand, palm up; he'll take it if he is ready. The same child, after he has learned not to be afraid, may enjoy the same sorts of jostling that delight many other children from the start. Never force your affection or any other "reinforcer" on any child. Find out what he likes and do that. Most young children, unless they are terribly frightened, find some demonstration of affection very reinforcing. When working with children from a different culture, be sure to learn what activities and gestures convey approval in that group. Don't hesitate to use them.

b. Tidbits. Tiny bits of candy, pretzels, pieces of cereal and the like, serve as concrete proof to a child that he is doing well. Again, with children from different backgrounds, find out what they consider a special treat. Tidbits give a child a good reason for doing something that might otherwise be quite unattractive. Many times we teach a child several behaviors before we get to the point where the task in itself might be interesting. For example, why should the child care about learning to sit at a table and to look at you? And yet, this is behavior you want to establish before you try to go on to possibly more interesting activities. Furthermore, the child may not be eager to engage in school work or begin to acquire a real interest in it until after he has experienced considerable success with it. It is often said that we do well at the things we enjoy doing. It may be equally valid to say that we enjoy doing the things we do well. For this reason, the tangible rewards can be extremely useful in developing skills to the point where they carry their own reward.

An assortment is easily carried in a plastic bag in a smock pocket; keep plenty on hand, in small pieces. Remember, you may be giving several each minute in an intensive training session. Make sure the tidbits are easily consumed. You can't reinforce a child with a second piece of hard candy if he still has the first one in his mouth.

Although almost all children love a treat, these reinforcers are especially effective with the resistant child who at first is not sure whether he wants to please you or not. He will come for your candy, if not for you! If anyone should complain to you about bribing little children, just remind them that bribery means offering an inducement to get someone to do something that he should not do. If these children are working hard to learn the things they should do, they deserve a special reward.

c. Tokens. One way to keep the advantages of giving a tangible reward, without having the inconvenience of edibles all the time, is to give the child a token as a reinforcer. Tokens should be relatively indestructible, large enough that they cannot be swallowed, lightweight enough so that the child can carry a quantity in a drawstring bag attached to his belt or tied around the waist. Poker chips or metal one and one-half inch washers serve the purpose well. The drawstring should be knotted so that the bag can be opened enough to put a token in easily but closed enough to make it difficult to remove the tokens. A cloth bag allows the child to jingle the tokens inside, and feel from the outside how full the bag is getting. Furthermore, it is with him at all times so he can put away tokens whenever he gets them.

At "cash in" time the knot can be untied so that the children can spend their tokens freely. In the beginning stages of training the time for spending could occur as often as recesses or breaks would ordinarily occur. The things that can be purchased with tokens can be more varied than is possible to administer "on the spot" in the classroom. In addition to buying candy, ice cream or drinks, the children can also spend them on opportunities to play with favorite toys, or buy trinkets, combs, or other more durable items to keep. Set up a special time and place for the "store" where the children can pick and choose as they wish. As children acquire more experience with this "monetary" system, individual banks can be set up so that they have the opportunity to save for a special event, such as a party or outing. Even under these conditions, the opportunity to cash in at least a portion of their earnings should remain available on at least a daily basis.

One complaint that sometimes arises from teachers is that the children have a tendency to stop and play with the tokens they have earned. The "savings bag" cuts this down considerably, and even when it does occur, it is generally only at the beginning of training. The children soon learn that playing with tokens only limits their chances to earn more. Sometimes it is necessary to say, "As soon as you put your tokens away, you can earn some more." Never make the mistake of stopping training to open the store at a time when someone has tokens out of the bag. Set up the firm contingency that all tokens must be properly placed in the bag before more can be earned and before going to the store.

Probably you will find it most effective and easiest in the long run to use a combination of the reinforcers available. As the child does something right, praise him, pat his head and give him a tidbit or token. Or, you will frequently find it convenient to offer praise while you are getting to him to give a token.

There are several ways to tell whether or not you have an effective reinforcer. If a child should shy away from your touch, spit out your candy, or consistently throw the tokens on the floor, you do not have a reinforcer. If he shows enthusiasm, smiles, or talks about earning tokens, you probably have a reinforcer. However, these are only clues about the child's likes and dislikes. The best way to tell if you have a reinforcer is to try it out and see if the child actually does the thing more often when you "reinforce" him. In short, if the child will work for your reward, your reward is indeed a reinforcer.

Summary. Perhaps the most important function of the teacher is to create a learning situation in which the child's efforts will surely lead to desirable consequences. Some of the desirable consequences or reinforcers which have proven effective for a wide variety of children are:

a. Social approval and demonstration of affection

b. Tidbits, such as candy or pretzels

c. Tokens which can later be traded in much the same way we use money

Social approval and affection are quick and easy to give, and are quite meaningful to most children. The tangible rewards, such as tidbits and tokens, give the child concrete evidence of success and a job well done. You will probably find it most desirable and effective to use a combination of reinforcers.

Part 5. What kinds of behavior can be considered approximations to the correct behavior? (Shaping by successive approximations)

So far we have discussed things that must be considered before shaping any behavior in the classroom. Prior to the opening of the class you have decided on the first group of behaviors (Part 1) that you want your pupils to have, and have structured the classroom in order to be as familiar and comfortable as possible for the children (Part 3a).

During the first few days with the children, try out your list of behavioral objectives to determine which children already have these responses and what behaviors each child still needs to learn. You also observe what they do instead of what you ask (Part 2). This is the "get acquainted" period, during which you allow the children to observe and imitate models (Part 3b and c). Finally, you can use this time to try out the potential reinforcers you have available (Part 4) in an informal way, to determine what the child likes. It is quite probable that by this time, at least some of the children will be doing quite well on some of the first items you wish to teach.

Now we are ready to concentrate on the child who has not learned to follow your request to sit at the table.

You are sitting at the table in the middle of the room with your reinforcers. You can begin by calling the child and telling him to sit down, pointing to the empty chair. "Johnny, sit down--here." Keep the instruction simple, clear and without excess words. After giving it you can also verbalize the contingency. "I have some candy for you."

a. If the child so much as looks at you even for a moment, smile and say, "Good boy." Get the "good boy" in while he is looking at you, not after he has glanced away. For the child who looks when you call to him, but makes no effort to come and sit down, establishing eye contact is the first approximation to reinforce. Engross yourself with the pictures on the table, be prepared to wait--there's no need to rush. Watch him out of the corner of your eye. It is possible to train yourself to stare straight ahead and observe through peripheral vision, so that you do not appear to be attending to the child until he looks at you again. When he does, praise him immediately--while he is looking at you.

If the child is at all responsive to verbal praise and smiles, these are the most convenient reinforcers to use because they allow you to remain at the table. As the child begins looking at you more frequently, continue to smile and praise him as long as he is looking at you. When you are maintaining eye contact for a few seconds, re-introduce your invitation to sit down. This time watch for the slightest movement forward, or if the child is sitting on the floor, the slightest stir to move. If there is any movement whatsoever, reinforce with "Good boy. Come on."

b. Movement becomes the next approximation to be reinforced. At first, any random movement on the part of a child who seems "glued to the spot" should be reinforced. If he stops, attend to your pictures as he wiggles around more; watch for those movements that are toward you and praise immediately, with smiles, words and attentiveness.

c. Now you reinforce only movements toward you. The child is standing; the first real move toward you is likely to be a step. If he is on the floor, it doesn't matter whether he begins to get up or starts crawling toward you--reinforce. If he stops or starts somewhere else, go back to your pictures and wait.

It is very difficult to ignore children on purpose; it takes practice. But you want to teach the child that he gets all the love and attention in the world so long as he is coming toward you. If he doesn't want to come, you're busy with other things; you won't push him. This also gives the child who is experiencing conflict about whether he wants to come to you or not, some room to move. He can come at his own pace, and if getting closer frightens him, he can "get rid of you," so to speak, simply by stopping until he is ready to try again. Of course, as he moves toward you, you can repeat the instructions to sit here, and get some candy. Continue to reinforce approaches and ignore other behavior. The approaches do not necessarily have to be with any "intention" of coming to you; just so long as they bring the child closer, they should be praised.

When a child is wandering around the room, the easiest mistake to make is that of starting to follow him around. In an effort to "get his attention," the teacher ends up trailing him around the room, coaxing him to sit down. When this happens, you end up with the child getting massive amounts of attention for leading you on a wild goose chase. Therefore, it is highly desirable if the teacher can learn to stay seated at the table herself, reinforce the child for coming to her, and actively ignore other behaviors.

Of course, if a child is about to behead himself by pulling the paper cutter off a top shelf, you must do something. (Next time remember to lock that cabinet door.) If the child is into something truly dangerous to himself or others, and if he does not respond to a firm "No," go to the child sternly, and remove him quickly and firmly from the disaster area, as you tell him "No, don't touch that." Be firm, spend as little time as possible in giving such attention, and take your seat again. Reserve long and friendly explanations about why we don't touch some things or why we don't hit other children for some other time when the child is not actively engaged in the destructive activity. Quickly reinforce with a "Good boy," anything other than a move toward the thing he should not touch. Then go back to reinforcing movements toward you.

You can afford to be firm with the child who insists on getting into things that he shouldn't. It is quite possible that he is "testing the limits" to find out just how far you will let him go. The sooner

you tell him, the better off you both are. Remember that it is the shy, frightened child who must be treated with extreme gentleness, and fortunately, he is not the one who is going to get into these dangerous situations.

d. You might have a child who may still wander around quite a bit, but who spends a lot of time "hanging around the table." At this point you will reinforce only when he is near the table--not approaches or distant eye contact. If the child first comes to your side of the table rather than to the chair, go ahead and give him a big hug for coming and then direct him to the chair by pointing and saying, "Now sit down here." If he does, of course reinforce, even if he sits only for a moment. If he comes to you instead of the chair with his eyes glued on the candy you have for him, give it to him, and then give him more for sitting down. Be sure to give the reinforcer while he is sitting, not as he starts to leave. Also, since you have shown considerable interest in these pictures on the table, it is likely that as the child starts hanging around the table, he will want to see the pictures, too. Don't show them to him until he is sitting in the correct chair. You can tell him that when he sits down in the chair he can look at pictures, too--along with getting candy or tokens.

e. Sitting in the chair is the next approximation now. If he sits down, reinforce. If he gets up and leaves, wait for the first eye contact and ask him to sit down here. Reinforce again for sitting.

f. As soon as he remains even for a few seconds, you can ask him to sit up straight, put feet on floor and reinforce any efforts to adopt a reasonable sitting posture.

g. Once he is sitting in a reasonable position, give praise, candy, or token for assuming the position, and then wait a few seconds and reinforce again for continuing to sit that way, commenting, "Good boy. Now you're sitting nice and still." If he is not looking at you, add the request that he look at you and again reinforce. Do this until the child is sitting still, looking at you for approximately 10 seconds before introducing teaching materials. If at any time the child leaves, call him as soon as he looks at you, reinforce as he comes back and give him something when he is sitting appropriately.

h. Attending to the task becomes your next approximation. If he holds still for a brief period, looking at you as you speak, show him the first picture and ask him to look at the picture. If he even glances at it, give him a token. Once he has put it away, or eaten the candy, ask him to look again and keep looking at it. Reinforce simply looking at the picture. Switch back and forth, asking him to look at you and look at the picture--"Look at me"--"Look at the picture." Reinforce looking appropriately. Now you are ready to start teaching him about the pictures.

To summarize, we have listed eight approximations to the terminal behavior:

(a) Reinforce eye contact, and continuing eye contact.

(b) Reinforce any movement.

(c) Reinforce any movement toward you.

(d) Reinforce being near the table, even if he is on your side of the table.

(e) Reinforce sitting down on appropriate chair.

(f) Reinforce longer periods of correct sitting still (up to 10 seconds).

(g) Reinforce appropriate posture (feet on floor, sitting up straight, facing forward).

(h) Reinforce looking at you, and looking at the picture on request.

All the way through, you have been giving the instructions to sit down while pointing to the chair, but you have been reinforcing the steps toward that goal.

There is always the danger that as you give instructions the child may try to follow them and simply misinterpret what you mean. For example, the child standing across the room may, as you say "Sit down here," sit on the floor where he is. If this should happen, quickly reinforce what he did do right with some comment like "Good. You sat down," and then re-phrase your instructions so as to make clear what you want. "Now, can you come over here and sit down?"

Keeping in mind the eight approximations listed, you will find that as training progresses, and you get to the point where you are reinforcing "higher level approximations" (such as movement toward you or sitting at the table), you will no longer reinforce the "lower level approximations" (like standing on the other side of the room or looking at you). You simply wait for eye contact to know when to re-issue your instruction.

Also, there will be times that the child is doing what he should be doing, but not doing it exactly the way you would like him to. For example, a child may move toward you and sit down, but may do so very slowly, or spend a lot of time arranging the chair before he seats himself. When these things happen, tell the child what you want, like "Hurry." Then you can give him one token for coming and a second bonus token "because you hurried" or "because you sat down right away."

We have outlined a single set of procedures for shaping a child to sit down without any reference to the "type" of child to be taught. We took into account some "individual differences" when we discovered that different reinforcers work better with different children. The other place where individual differences are relevant is that different children will start at different places on the continuum of approximations and spend more time at one level.

For example, the "Distractible child" described earlier is likely to run toward the table immediately the first time you call him, and dart away just as quickly. With him, you can begin training at Approximation d (being near the table).

The "Resistant child" probably has good eye contact and is on the move, and training can start at Level c (movement toward you), and he is likely to play games with you for quite a while there. He is likely to come mainly for your candy or token at first, to be slow about coming and frequently will try to tease you by making false starts and suddenly turning in the other direction. Have a good reinforcer.

Learn to give attention for desired behavior and to ignore undesired behavior in a very clear-cut manner. The very shy child will have most difficulty in getting through the first two steps. In fact, always bear in mind the possibility that any time you do not find the child moving from one step to the next, that it may be necessary to insert an additional step in between. For example, if you sit at the table for five minutes and the shy child has not even glanced at you once, you may give up on the sitting at the table for a while and move to two or three feet from him and reinforce eye contact and first movements and even some movement toward you, like reaching his hand toward you. Then, increase the distance and repeat the same procedure until you are back at the table and he is looking at you.

If you find that you have been able to reinforce at Levels d and e and then you suddenly "lose" the behavior, you can back up to a lower level, reinforce there a few times, and build back up to higher levels.

Approximation f, in particular, can be broken down into many steps, if necessary, and each small step reinforced. It has not been subdivided here because frequently, when you ask a child to sit up straight, he will do several things at once, like turn forward in the chair, hold head up, and put feet on the floor. If they all come at once, reinforce him, and do not worry about the approximations to "sitting up straight" unless you have to.

Summary. One set of procedures has been described which can be employed to help almost any "type" of child learn to sit at a table and attend to a task.

The procedures involved breaking down the terminal behavior of sitting appropriately into the small steps that will lead the child from whatever he is doing to the desired goal.

Each of these approximations is then reinforced until the child has learned the behavior.

Part 6. What can you do to insure that he will continue to cooperate once he has learned to do what you ask? (Maintaining the behavior)

When the child accomplished the task of sitting and looking appropriately at you and the materials, it is quite natural to go on to giving reinforcers for the steps involved in working on the task itself. The sitting behavior becomes a part of the chain of behaviors that lead to reinforcement for working on other tasks. Of course, if you get him that far and then proceed to make the task itself as aversive as possible with a lot of nagging and criticism, you will find that not only will he fail at the task, but also with no reinforcement, he will quit coming to the table, too.

Even though you are now giving more of your reinforcers for making correct responses on the task itself, it is appropriate once in a while to give some special recognition for good behavior that is not task-oriented. For example, suppose the group sits very nicely while you are detained talking to someone who came into the room. Give everyone an extra token or two and let them know that you do value such good conduct.

The instructions for shaping a child to sit are intended to be used, initially at least, when you are alone with one child. In fact, it is necessary that you get your first practice in shaping in a one-to-one situation. It is possible to set aside a special time (in another setting perhaps) to refine your technique. Once you become skilled, it is often not difficult to shape several children simultaneously, and to have the advantage that slower ones will also imitate faster ones who are getting reinforced.

On the other hand, if you find a situation in which most of the class is ready to work on the pictures at the table and you still have one sitting in the corner, another prone to wander, it would be most economical in the long run to sacrifice a couple of recesses or lunch periods to work with the laggards individually, and bring them up to the group. Or, if you have an assistant, train one or two children while the assistant plays outside with the rest, and then gradually introduce more children who need shaping into the group that is already functioning and who can serve as models.

Summary. This discussion has focused on the things that a teacher can do to facilitate learning in young children who are entering school. First, she should define her goals in terms of immediate and specific behavioral objectives that can be taught one at a time. Next, she should learn to observe the actual present behavior of the children to become aware of the variety of behaviors different children will display upon entering school. Third, she should structure the classroom situation so as to reduce the "newness," provide the students with information about what is expected of them, and make the task at hand attractive. Fourth, she must search out and determine what reinforcers will be effective with individual children. Fifth, she can reinforce approximations to the behavior she is trying to teach. Finally, she will take steps to insure that the children get some reinforcement for continuing to behave properly as well as getting a great deal of reinforcement for going on to learn new things.

In using these procedures, she is not only finding a smooth way of teaching children, but establishing a positive environment in which the child can experience much success. In an atmosphere where good behavior is recognized and reinforced, the child will like and value the school activities, and enter learning situations freely without fear of coercion or threat of punishment.

APPENDIX I
Estimates of Various Positions on Problems of Learning*

Problem	Thorndike (connectionist)	Guthrie (Contiguous Conditioning)
1. Capacity	Learning capacity depends upon the number of bonds and their availability. The differences between bright and dull are quanitative, although intelligence has dimensions of altitude as well as of breadth. The theory of transfer.	Problems of capacity are ignored, so far as formal treatment is concerned. Presumably any response which the organism can make can become associated with any stimulus to which he has a response-a generalization about the possibility of learning which is reminiscent of what Thorndike says about associative shifting. If pressed, Guthrie could find a basis for difference in capacity both in the differentiation of movement and in the discrimination among proprioceptive cues All animals are not equally versatile and equally equipped with receptors.
2. Practice	Repetition of situations does not in itself modify connections. Repetition of connections leads to a negligible increase in strength, unless the connections are rewarded. Practice is important because it permits rewards to act upon connections.	Practice assimilates and alienates cues, until a whole family of stimulus combinations comes to evoke a whole family of responses which lead to the outcome socially described as successful performance. Because skill represents a population of habits, learning appears to accumulate with repetition, although basically each individual habit is learned at full strength in a single repetition.
3. Motivation	Reward acts directly on neighboring connections to strengthen them; punishment has no corresponding direct weakening effect. Punishment may work indirectly, however, through making the learner do something else which may be strengthened directly, without awareness.	Motivation affects learning indirectly through what it causes the animal to do. Reward is a secondary or derivative principle, not a primary one as in Thorndike's system. Reward works because it removes the animal from the stimulating situation in which the "correct" response has been made. It does not strengthen the "correct" response, but prevents its weakening because no new response can become attached to the cues which led to the correct response. Thus there is a relative strengthening, because responses to other cues get alienated. Punishment is inadequately handled by the cagegorical statement that the learner does what he did last time as a consequence of punishment.

Problem	Thorndike (continued)	Guthrie (continued)
4. Understanding	The role of understanding is minimized, not because it is undemonstrable, but because it grows out of earlier habits. The best way to get understanding is to build a body of connections appropriate to that understanding. When situations are understood at once it is a matter of transfer or assimilation, that is, there are enough elements in common with old situations to permit old habits to acceptably.	Concepts like "insight" are handled in a derisive manner, although it is recognized that learning with foresight of its consequences may occur. The tendency is to talk down such learning, however, just as Thorndike does, and to emphasize the stupid, mechanical, and repetitious nature of most human as well as animal learning. Such learning with intention and foresight as does occur is explained on the basis of conditioned anticipatory or readiness reactions, based upon past experience and hence not contradicting association principles.
5. Transfer	The theory of identical elements is espoused. Reaction to new situations benefits by the identity of these new situations, in part, with old situations, and also by a principle of analogy described as assimilation.	Learning transfers to new situations because of common elements within the old and new. In this the position is rather like Thorndike's. Stress is laid, however, on the identity being carried by way of common responses evoked, the proprioceptive stimuli being sufficiently similar from responses to a variety of stimuli to evoke common conditioned responses. The emphasis upon movement-produced stimuli thus represents Guthrie's supplementation to Thorndike. Because of his principle of responses being conditioned to all adventitious contiguous stimuli, Guthrie expects rather little transfer, and is, in fact, rather extreme about it. The only way to be sure to get desired behavior in a new situation is to practice in that new situation as well. To be able to perform in a variety of situations, you have to practice in a variety of situations.
6. Forgetting	The original law of disuse assumed forgetting to take place without practice in accordance with the empirical findings of studies. Later books have not dealt with the problem in any detail; the law of disuse is not mentioned, but some decay with no practice is still implied.	Learning is said to be permanent unless interfered with by new learning. Hence all forgetting is due to the learning of new responses which replace the old responses.

Problem	Hull (Systematic Behavior)	Skinner (Descriptive Behaviorism)
1. Capacity	Individual differences in capacity are to be explained according to differences in the constants. It is not clear whether or not learning will modify these constants. That is, of course, the basic problem of the relationship between learning and relatively persistent individual differences.	In a descriptive system, it is to be expected that the laws will contain empirical constants differing for various species and for different members of each species. The eating rate, for example, cannot be expected to remain the same for young and for old animals, and for animals unlike in their food preferences. Because lawfulness rather than laws is what the system insists upon, differences in capacity are not of central importance. There is no suggestion that at higher capacity levels the laws are essentially any different; verbal behavior in man, for example, is said to conform to the general principles of operant behavior.
2. Practice	Mere contiguous repetition does nothing except to produce reactive inhibition; all improvement depends upon reinforcement. Hill is in this respect in agreement with Thorndike, and opposed to Guthrie.	Something like a simple law of exercise is accepted for Type S conditioning, while for Type R conditioning depends upon repeated reinforcement. The laws of extinction are also laws of exercise, but exercise in the absence of reinforcement. The building of a reflex reserve is not a simple consequence of the number of reinforcements, but depends upon the arrangements of reinforcement, as in periodic reconditioning or reinforcement at a fixed ratio.
3. Motivation	Because need-reduction is used to explain the reinforcing effect of rewards, it is used also to explain the reinforcing effects of punishment. This it does by finding escape from punishment essential if punishment is to be reinforcing. This assimilation of punishment to reward is accepted, and need-reduction is used to explain the reinforcing effects of both reward and punishment. Food reward relieves hunger-tension; escape from shock reduces shock-tension. Any more complicated relationships involving anxiety, avoidance, expectation, and the like, may be derived from the simpler principles of reinforcement. Drive is complexly related to learning; it serves in reinforcement, in activating habit strength into performance, and in providing differential internal stimuli.	In agreement with Thorndike, reward is found to increase reflex strength, while punishment has no corresponding weakening influence. The treatment of punishment is more sophisticated than that by Guthrie or Hull. While there are several ways in which punishment enters, one is to create the state called emotion, which reduces rate of responding without weakening the reflex reserve. Drive and emotion are both treated as states of the organism--not as stimuli or as responses.

Problem	Hull (continued)	Skinner (continued)
4. Understanding	Hull has dealt with the problem of directing ideas and with novel problem-solving in several papers. The main thread running through the papers is that the organism's own responses furnish stimuli which are the surrogates for ideas. Responses which provide such stimuli are called "pure stimulus acts" because their function is that of furnishing stimuli. These responses are often in the nature of fractional anticipatory goal responses, and the stimuli from them help to marshall the habits appropriate to the problematic situation. Ideas thus have the substantive quality which Guthrie also assigns them. Two general principles emerge as important, noth depending upon the presence of fractional anticipatory responses and discriminations among the stimuli which these responses arouse. These are the principle of the goal gradient and the principle of the habit-family hierarchy, as previously described.	The problem of understanding is essentially irrelevant to the discussion within the framework of Skinner's system. Most behavior which would ordinarily be called voluntary is subsumed under the discriminated operant. Because of the correcorrelation between responses and their consequences, it would not be hard to impose a cognitive interpretation upon operant behavior, but Skinner does not do so. The secondary reinforcing character of discriminating stimuli is close to what Tolman calls sign learning.
5. Transfer	There are two aspects of transfer: equivalence of stimuli and equivalence of responses. Hull explains equivalence of stimuli either on the basis of generalization or via intermediate reactions. Alternative responses are explained on the basis of the habit-family hierarchy, so that if a favored response fails, another response, lower in the hierarchy, is called forth. All responses in the hierarchy have in the past led to the same goal.	Skinner prefers to use the term induction for what is commonly called generalization in conditioning literature. Such induction is presumably the basis for transfer, although Skinner has little to say about it.
6. Forgetting	In the volume on rote learning the decay of excitation is postulated by Hull as occurring according to a kind of law of disuse. That forgetting should occur lawfully does not preclude the possibility that the lawfulness is engendered by the cumulative interferences of ordinary life outside the laboratory. But Hull has not said so. Reminiscence effects--increases over lapse of time--are explained on the basis of recovery from inhibition.	There is no special theory of forgetting proposed, although the distinction between extinction and true forgetting is maintained. The suggestion is that both conditioning and extinction are long remembered. Spontaneous recovery does not mean that extinction is forgetten, for successive extinctions show the results of earlier ones.

Position	Functionalism	Gestalt Theory
1. Capacity	Robinson recognized individual and species differences in his laws of individual differences and of composition. It was in line with functional developments for McGeoch to include in his book a chapter on learning as a function of age, sex, and test intelligence. McGeoch believes that the increase of learning ability with age is best accounted for on the basis of two hypotheses: first, organic maturation, second, changing psychological conditions (transfer, motivation, personality traits).	Because learning requires differentiation and restructuring of fields, the higher forms of learning depend very much upon natural capacities for reacting in these ways. Poor methods of instruction, however, may be responsible for some inability to face new situations, for a "blindness" which might be confused with stupidity.
2. Practice	The law of frequencey is to Robinson a law of relative frequency, which therefore recognizes the losses in score when practice is overcrowded along with the gains when trials are more appropriately spaced. There is a tendency to emphasize the form of the learning curve, and to seek the conditions under which one form rather than another is to be found. There is, however, no diatribe against a law of exercise.	Changes go on within repetition, not as a result of repetition. Practically all psychologists now agree that this is so, but they differ with regard to the pertinent processes which go on within the repetitions. From the gestalt point of view, repetitions are successive exposures, bringing to light relationships to enter into restructurization. To Koffka, they also make possible the consolidation of trace systems, which is as near as any gestalt psychologist comes to saying that responses become fixed by repetition.
3. Motivation	Woodworth's dynamic psychology places motivation at its core. Carr accepts in principle the preparatory-consummatory sequence, assigning motivation the role of a continuing stimulus to be terminated by the goal-response. The concept of "set" enters into the more conventional experiments on memorization and skill as a motivational supplement to the more familiar laws of association. It is the preoccupation of the functionalist with such tasks as the learning of rote verbal series which has tended to place motivation in the background rather than the foreground of theories such as Robinson's.	Goals represent end-situations, and as such modify learning through the principle of closure. The processes leading to the successes or failures get transformed by their consequences. The empirical law of effect is accepted, but Thorndike's interpretation of the blind action of effect is denied.

. Problem	Functionalism	Gestalt theory
4. Understanding	While the associationist recognizes that meaningful material is more readily learned than nonsense material, degree of meaning is but one of the dimensions upon which materials can be scaled. Hence he does not believe problem-solving or insight to require interpretations beyond ordinary associative learning. The organism uses what it has learned as appropriately as it can in anew situation. If the problem cannot be solved by analogy, the behavior has to be varied until the initial solution occurs. Insight is perhaps an extreme case of transfer of training.	The perceiving of relationships, awareness of the relationships between parts and whole, of means to consequences, are emphasized by the gestalt writers. Problems are to be solved sensibly, structurally, organically, rather than mechanically, stupidly, or by the running off of prior habits.
5. Transfer	Following Thorndike, transfer falls chiefly under the law of assimilation. That is, transfer depends upon degree of likeness between the new situation and the old. Woodworth reinterprets the theory of identical elements to mean only that transfer is always of concrete performances.	The gestalt concept most like that of transfer is transposition. A pattern of dynamic relationships discovered or understood in one situation may be applicable to another. There is something in common between the earlier learning and the situation in which transfer is found, but what exists in common is not identical piecemeal elements, but common patterns, configurations, or relationships. One of the advantages of learning by understanding rather than by rote process is that understanding is transposable to wider ranges of situations, and less often leads to erroneous applications of old learning.
6. Forgetting	The favorite theory of forgetting is that of retroactive inhibition, but the functionalist does not insist that this is the whole story. There may be some forgetting according to passive decay through disuse, and there may be forgetting through repression, as pointed out by Freud.	Koffka relates forgetting to course of change in the trace. Traces may disappear either through gradual decay (a possibility hard to prove or disprove), through destruction because of being part of a chaotic, ill-structured field, or through assimilation to new traces or processes. The last possibility is familiar as a form of theory of retroactive inhibition. Traces which continue to exist may at a given moment be unavailable.

Problem	Lewin (topological)	Wheeler (organismic)
1. Capacity	The life space of an adult is more highly differentiated than that of a child. Similarly the life space of an intelligent person is structured more highly than that of a less intelligent person. There are also differences in fluidity or rigidity.	Capacities are the result of maturation, but maturation is itself induced by stimulation. Therefore Wheeler is more of an environmentalist than most gestalt psychologists.
2. Practice	Learning may take place with repetition because the change in cognitive stucture or in motivation may require repetition. There is, however, no one-to-one relationship between number of trials and the changes which constitute learning.	Within repetitions there is stimulation to maturation. Once a process is started, it keeps going unless something stops it; habits persit because of inertia. Growth may take place between repetitions.
3. Motivation	The differences between reward and punishment are well represented in "topological" diagrams, which point out the difference in the amount of policing required in the two situations. This aspect of reward and punishment had been neglected by all the other writers considered. It is preferable to speak about success and failure rather than about reward and punishment. Then the concepts of ego-involvement and level of aspiration become important. Cognitive sturcture is both activated by and changed by aroused needs or tensions. Motivation is therefore of central importance within the theory.	All learning is goal-seeking. If rewards are to be effective they must really be identified with the goal. "Mastering a task in an adequate and efficient fashion, for the sake of the knowledge and use that the mastery of the task is to give the individual, should be the true reward of the learning process." Feelings are not to be interpreted as motives; they are symptoms. Pleasure and annoyance should be used as signs as to how the learning process is going, not as a method of promoting learning.
4. Understanding	Because one of the chief characterizations of learning is as a change in cognitive structure, knowledge and understanding lie at the heart of learning.	All learning is meaningful, insightful. Therefor, it is essentially cognitive. Insight has an "expanding, emerging" character, so that insightful learning leads to further insightful learning.
5. Transfer	Probably the Gestalt concept of transposition is acceptable to Lewin.	Transfer requires making the same response in a new situation which was made in an older one. "Transfer can take place, then, only when the two tasks are so similar that the learner can apprehend them in the same whole, that is, perceive that the responses learned in the first task fit the second." When transfer occurs, it is the whole system conditioning the activities of its parts. Wheeler sets this principle in opposition to the

Problem	(Lewin (continued)	Wheeler (continued)
6. Forgetting	Motivated forgetting is important. The dynamics are rather complicated, with interruption in an ego-involved task leading usually to better retention and to attempts at resumption when the opportunity is offered. However, something like repression is accepted, in the forgetting of too difficult tasks.	Wheeler objects to the memory-trace theory as proposed by Kohler and Koffka. His "non-process" theory is said to be one having to do exclusively with the present. This makes little difference in practice, for some representation of the past remains to influence the present perceptual fields. Forgetting is said to be an active learning process, an effort to continue learning under adverse conditions, i.e., in the absence of sufficient cues. The phenomena of retroactive inhibition is interpreted as negative transfer.

Problem	Tolman (Sign Learning)	Freud's Psychodynamics
1. Capacity	In his clear statement of the necessity for capacity laws, Tolman is one of the few systematic writers on learning to focus upon this aspect of learning. The matter interests him chiefly because of the possible graduation of learning tasks from those requiring least to those requiring most intelligence. It is natural that one who makes predictions about what animals will do in problem-solving situations is confronted with the limitations of one organism as compared with another. Tolman believes that the high degree of specificity of capacities in the rat is due to the lack of influence of a culture which prizes certain behaviors over others. Hence one of the contributions of animal studies may be to show processes at a sub-cultural level.	Freud's theory implies that primary regressions occur in the first years of childhood, and character syndromes find their origins in the conflicts over food, toilet training, sex, aggression. The resolution of these conflicts takes place according to fundamental themes or styles of response, and the rest of life is spent in playing out these early themes with the assimilation, of course, of new content. Fundamental changes in the structure of the personality do not take place through ordinary education; such changes require the special kind of reeducation provided by depth therapy. Alongside are the conflict-free ego processes, which are the kinds dealt with in ordinary give-and-take with the real environment. At some stages of life the conflictual personal problems loom unusually large, and make difficult the adjustment to external reality implied in school learning. The easiest time for conflict-free learning should be during the "latency period," and after adolescent conflicts are resolved.
2. Practice	The law of exercise is accepted in the sense of the frequency with which the sign, the significate, and the behavioral relation between the two, have been presented. Exercise is not the cause of the initial selection of the right response. Mere frequency without "belonging" does not establish a connection. After a response has been learned, over-exercise tends to fix it, making it unduly resistant to change.	The repetition-compulsion is not a principle of learning-by-doing. The principle of learning through practice is better illustrated by "working through," in which the patient faces the same conflicts over and over again in the process of reeducation. Learning takes place in "working through" because the conflicts are faced from new angles, and the cues to faulty conduct become detected early enough so that the behavior can be changed. Repetition is needed for learning, but for repetition to be effective it must be repetition with a difference.

Problem	Tolman (Sign Learning)	Freud's Psychodynamics
3. Motivation	Rewards and punishment tend to regulate performance, rather than acquisition, although they are related to acquisition also because they serve as "emphasizers" and because goal-objects confirm or refute hypotheses. Because of the demonstration of latent learning, the law of effect in its usual sense (reward as a strengthener of response tendencies) is not accepted.	Freud's is chiefly a psychology of motivation, and he detected motivational control in kinds of behavior that others had thought of as trivial or accidental, such as minor forgetting and slips of speech. The motivational concepts that have impinged most directly upon contemporary learning theory are anxiety (as a learned drive), and the consequences of various ego threats, as in the studies of regression, aggression, repression, and the defense mechanisms generally.
4. Understanding	Cognitive processes are of the very essence of molar behavior and learning. Hence Tolman is friendly to learning by creative inference, inventive ideation, and so on. He repeatedly states, however that he does not wish to imply "introspectively get-at-able conscious contents." The prototype of learning is sensible, reasonable adjustment according to the requirements of the situation; stupid leaning occurs as a limiting case when the problem is unsuited to the learner's capacities or is set up in inaccessible form. Insightful learning is not limited to the primates; it is characteristic of rat behavior as well.	Despite Freud's preoccupation with the irrational in human behavior, his theory lays great stress upon the possibilities of cognitive control. The developing "ego psychology," playing up the "conflict-free ego sphere," allows even more room for rationality in the control of conduct. The aim of psychoanalytic therapy is to get rid of self-deception and other blocks to rationality. To the extent that the methods are successful, they should provide some principles useful for learning and teaching.
5. Transfer	The problem of transfer of training as such has been of relatively slight interest to those experimenting with animals. To some extent all the experiments on change of reward, change of drive, place learning, latent learning are experiments on problems related to transfer, that is, the ability to use something	"Transference" has a special meaning in psychoanalysis. It refers to the special role that the therapist plays for the patient as the therapist stands from time to time for important people in the patient's life, perhaps the mother, or father, or older brother. The patient reacts to the therapist

Problem	Tolman (Sign Learning)	Freud's Psychodynamics
	learned in one situation in relation to another. All cognitive theories expect a large measure of transfer, provided the essential relationships of the situation are open to the observation of the learner.	with the emotions appropriate to these other people. Thus psychoanalytic transference does share with transfer of training the fact of generalization of responses learned in one situation to novel but related stimuli. By way of symbols, something commonly stands for something else and provokes the responses (especially affective responses) appropriate to that something else. Other processes of symbolization and condensation are relevant to the manner in which earlier and later learning come into psychological relationship.
6. Forgetting	Tolman has not treated the problem of retention, except as a capacity. Having earlier experimented in the field of retroactive inhibition, it is probable that he is friendly toward some theory of retroactive inhibition, and he has indicated that he accepts the Freudian mechanism of repression.	Freud held the view that registration of early experiences persists throughout life, that forgetting is therefore chiefly the result of repression. Although the most important repressions take place first in early childhood, the repressive process continues throughout life, maintaining the original repressions, and adding new items to the unconscious store.

---

*Adapted from Kimble[30]

BIBLIOGRAPHY

1. Allen, K. Eileen, *et al*. "Effects of Social Reinforcement on Isolate Behavior of a Nursery School Child," *Child Development*, 35:511-18, 1964.

2. Ausubel, D. P. "A Teaching Strategy for Culturally Deprived Pupils: Cognitive and Motivational Considerations," *The Disadvantaged Learner: Knowing, Understanding, Educating*. Edited by Staten W. Webster. San Francisco: Chandler Publishing Company, 1966.

3. Bagnham, D. "The Great Cities Project," *National Education Association Journal*, 52:17-20, No. 4, 1963.

4. Bloom, R., M. Whiteman, and M. Deutsch. "Race and Social Class as Separate Factors Related to Social Environment." Paper read at the American Psychologist Association, Philadelphia, September, 1963.

5. Bloom, Sophie. "Improving the Education of Culturally Deprived Children: Applying Learning Theory to Classroom Instruction," *Chicago School Journal*, December, 1963, reprinted in *The Disadvantaged Learner*, edited by Staten W. Webster.

6. Brembeck, C. S. *Social Foundations of Education; A Cross-Cultural Approach*. New York: John Wiley & Sons, Inc., 1966.

7. Bugelski, R. B. *The Psychology of Learning as Applied to Teaching*. Indianapolis: The Bobbs-Merrill Co., Inc., 1964.

8. Cameron, A., and T. Storm. "Achievement and Motivation in Canadian Indian, Middle, and Working Class Children," *Psychological Reports*, 15:459-63, 1965.

9. Carr, W. J. *Programmed Learning*. New York: D. Van Nostrand Co., Inc., 1962.

10. Chase, S. "Foreword," in B. J. Whorf, *Language, Thought, and Reality*, edited by John B. Carroll. Cambridge, Massachusetts: The M.I.T. Press, 1956.

11. Chomsky, N. *Aspects of the Theory of Syntax*. Cambridge, Massachusetts: The M.I.T. Press, 1965.

12. Dave, R. H. "The Identification and Measurement of Environmental Process Variables that are Related to Educational Achievement." Unpublished doctoral dissertation, University of Chicago, 1963.

13. Deutsch, M. "Minority Group and Class Status as Related to Social and Personality Factors in Scholastic Achievement," *Society for Applied Anthropology*, Monograph No. 2. Ithaca, New York: Cornell University, 1960.

14. Douvan, Elizabeth. "Social Status and Success Strivings," *Journal of Abnormal and Social Psychology*, 52:219-23, 1956.

15. Dunlap, K. *Habits: Their Making and Unmaking*. New York: Leveright, 1932.

16. Elam, Sophie L. "Acculturation and Learning Problems of Puerto Rican Children," *Teachers College Record*, Fall, 1960, reprinted in *The Disadvantaged Learner*, edited by Staten W. Webster.

17. Gagne, R. M. *The Conditions of Learning*. New York: Holt, Rinehart and Winston, Inc., 1965.

18. Goff, Regina M. "Some Educational Implications of the Influence of Rejection in Aspiration Levels of Minority Group Children," *Journal of Experimental Education*, 24:179-83, 1956.

19. Goffman, E. *The Presentation of Self in Everyday Life*. New York: Anchor Books, 1959.

20. Harris, Florence R. "The Use of Reinforcement Principles with Nursery, Preschool, and Kindergarten Children." Paper read at Annual Meeting of AERA, New York City, February, 1967.

21. Hartup, W. W., and Susan Tifkin. "Sociometric Status and Reinforcing Effectiveness of Children's Peers," *Journal of Experimental Child Psychology*, 2:306-16, No. 4, 1965.

22. Hilgard, E. R. (ed.). *Theories of Learning and Instruction, 63rd Yearbook of the NSSE*. National Society for the Study of Education. Chicago: University of Chicago Press, 1964.

23. _______. *Theories of Learning*. New York: Apple-Century-Crofts, Inc., 1948.

24. Hill, Winfred F. *Learning: A Survey of Psychological Interpretation*. San Francisco: Chandler Publishing Co., 1963.

25. Holland, W. R. "Language Barrier as an Educational Problem of Spanish-Speaking Children," *Exceptional Children*, 1962, reprinted in *The Disadvantaged Learner*, edited by Staten W. Webster.

26. Homme, L. E., and D. T. Tosti. "Contingency Management and Motivation," *Journal of the National Society for Programmed Instruction*, 6:7, September, 1965.

27. ______, *et al*. "Use of the Premack Principle in Controlling the Behavior of Nursery School Children," *Journal of Experimental Analysis of Behavior*, 6:544, 1963.

28. Hull, C. L. *Principles of Behavior*. New York: Appleton-Century-Crofts, Inc., 1943.

29. Joyce, B. R., and B. Harootunian. *The Structure of Teaching*. Chicago: Science Research Associates, Inc., 1967.

30. Kimble, G. A. *Hilgard and Marquis Conditioning and Learning*. New York: Appleton-Century-Crofts, Inc., 1961.

31. Klugman, S. F. "The Effect of Money Incentive versus Praise upon the Reliability and Obtained Scores of the Revised Stanford-Binet Test," *Journal of General Psychology*, 30:255-67, 1944.

32. Kohn, M. L. "Social Class and the Exercise of Parental Authority," *American Sociological Review*, 24:252-66, 1959.

33. ______, and Eleanor E. Carroll. "Social Class and the Allocation of Parental Responsibilities," *Sociometry*, 23:372-92, 1960.

34. Krutch, J. W. "Men, Apes, and Termites," *Saturday Review*, September 21, 1963:22-25.

35. Maccoby, and Nancy Modiano. "On Culture and Equivalence," *Studies in Cognitive Growth*, edited by J. S. Brunner. New York: John Wiley & Sons, Inc., 1956.

36. Miller, N. E., and J. Dollard. *Social Learning and Imitation*. New Haven: Yale University Press, 1941.

37. Milner, A. "A Study of the Relationship Between Reading Readiness in Grade One School Children and Patterns of Parent-Child Interactions," *Child Development*, 22:95-122, 1957.

38. Neal, D. C., and J. M. Proshek. "School Related Attitudes of Culturally Disadvantaged Elementary School Children," *Journal of Educational Psychology*, 58:238-44, 1967.

39. Schmuck, R. "Some Aspects of Classroom Social Climate," *Psychology in the Schools*, 3:59-65, 1966.

40. Pressey, S. F. *Programmed Learning*. Edited by Wendell I. Smith and J. William Moore. New York: D. Van Nostrand Co., Inc., 1962.

41. Sidman, M. *Tactics of Scientific Research*. New York: Basic Books, Inc., 1960.

42. Skinner, B. F. "Freedom and Control of Men," *American Scholar*, Winter, 1955-56 (Special Issue).

43. ______, *Skinner's Operant Conditioning in Theories of Learning*. New York: Appleton-Century-Crofts, Inc., 1948.

44. ______, "Teaching Machines," *Scientific American*, 128:969-77, 1961.

45. ______. *The Behavior of Organisms: An Experimental Analysis*. New York: Appleton-Century-Crofts, Inc., 1938.

46. Speiss, J. "Perceptual Styles of Learning as a Function of Culture and Class." Unpublished study, University of New Mexico, 1968.

47. Spence, J. T., and L. T. Segner. "Verbal versus Nonverbal Reinforcement Combinations in the Discrimination Learning of Middle- and Lower-Class Children," *Child Development*, 38:29-38, 1967.

48. Steve, C., *et al*. *Indian Teacher-Aide Handbook*. Tempe, Arizona: University of Arizona, 1965.

49. Taber, J. I., R. Glaser, and S. H. Halmuth. *Learning and Programmed Instruction*. Massachusetts: Addison-Wesley, 1965.

50. Ullmann, L. P., and L. Krasner. *Case Studies in Behavior Modification*. New York: Holt, Rinehart and Winston, Inc., 1966.

51. Ziegler, E. F., L. Hodgkin, and H. W. Stevenson. "The Effect of Support and Non-Support on Performance on Normal and Feebleminded Children," *Journal of Personality*, 26:106-22, 1958.

52. ______, and P. Kanzer. "The Effectiveness of Two Classes of Verbal Reinforcers on the Performance of Middle- and Lower-Class Children," *Journal of Personality*, 30:157-63, 1962.

53. Zimmerman, B., and J. Zimmerman. "The Alteration of Behavior in a Special Classroom Situation," *Journal of the Experimental Analysis of Behavior*, 5:59-60, 1962.

54. Zintz, M. V. *Education Across Cultures*. Dubuque: Wm. C. Brown, 1963.

55. ______. *The Indian Research Study: The Adjustment of Indian and Non-Indian Children in the Public Schools of New Mexico*. University of New Mexico, U. S. Dept. of Health, Education and Welfare, U. S. Office of Education, 1960.